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A WARNING FROM MINNESOTA ON CHASING WILL O' THE WISPS

Telephone men who are giving more personal attention to the boom in the purchase of telephone properties than the real job of developing their own business are making a serious mistake.

It is natural to take a keen interest in the events that show not only a lively demand for telephone properties but a willingness on the part of the purchaser to pay a fat price. It may also be natural for the telephone owner, who hears of these alluring offers, to ask himself: "Why shouldn't I go out and get some of this easy money?"

No telephone owner, however, should neglect his real work of keeping up good service and maintaining his plant for the purpose of chasing the will o' the wisps connected with speculative buying in the telephone field. Of course, there is no law against his disposing of his property and getting as good a price as is consistent with safety, but the surest way to have something worth buying is to keep his plant in first-class condition. That can't be done by spending much time chasing around for a buyer.

* * * *

The active demand for good telephone plants which aroused so much comment last year has continued during the first four months of 1927. In compiling the 1927 edition of TELEPHONY's "Directory of the Telephone Industry," special pains were taken to keep up with the constantly recurring changes in ownership and management, and with success. Within a week after the date the directory went to press, however, reports were received of the transfers of four companies in one state. This indicates continued activity.

This was in Minnesota, and was made the subject of a bulletin issued by Secretary J. C. Crowley of the Minnesota Telephone Association and led him to say: "It now appears to us that we are to have another year of exceptional activity in the sale and purchase of telephone properties."

The situation moves Secretary Crowley to utter a warning to operating telephone men to pay closer attention to their company local affairs, and pointing out in a most timely fashion the unfortunate results of their wasting time seeking easy money from buyers.

After naming the four telephone company sales referred to, the bulletin says:

"The above is at least a start for this season, and, recollect, the state highways have not been the best for travel, so we look for many changes if the past 30 days are any indication of what is to follow. The game of purchase and sale seems to be the most popular part of the telephone business at the present time. Some owners of properties refuse to extend or improve their plants, in the hopes that somebody will come along and 'raise the ante' or present offer.

Recently your secretary made a trip of 400 miles in the state, and on a check-up and calls made, found that during that four days, five representatives of large and small operating telephone companies (I was so advised) were out negotiating, either directly or in company with other agents, for the purchase of telephone properties.

* * * *

These are hectic days, and we are wondering if some are not permitting themselves to neglect that which is most essential, that which has been the very foundation of their success—in other words, that which has been their meal ticket—for the sake of chasing this rainbow.

And when the rainbow fades, will they not find that, while they have satisfied their desire in acquirement, a change has come about in their own domicile, that discord, discontent and suspicion have succeeded peace, tranquility and coöperation? Time alone will answer."

* * * *

There is force to this observation. If the impression prevails that the owner is more concerned about selling out than in developing and continuing the business, the employes are not likely to show much interest in carrying on their work efficiently. If they feel that the boss is simply marking time until he disposes of the property, they, too, will mark time, and slide along with as little effort as possible. This means retrogression.

Such a condition injures the morale of an organization, discourages ambition and in a short time tears down the constructive work of years.

Under the terse title, "Facts," the Minnesota bulletin then presents these straight-from-the-shoulder comments:

"Coöperation is the life of the telephone business. The spirit of telephony is service, not speculation. History does not reveal that any army of generals ever won any battle. On the other hand, good generalship, with a well trained and experienced corps of soldiers, has won many a campaign.

Telephone investments have been protected from adverse legislation, both state and national, as a result of the personal activities of popular and influential operators. The gradual removal of these operators will weaken that defense. If it is essential that two groups be maintained in the service of the nation, it is equally essential that certain groups be maintained throughout every state to support the smaller of the national groups.

'Stop! Look! Listen!' is an appropriate warning at this time. Napoleon's ego met its Waterloo. Slavery challenged common humanity to destroy it, and the saloon in politics inspired the 18th amendment. It is sometimes easier to deceive yourself than the other fellow."

* * * *

The result of some financing operations probably will not be definitely known until sufficient time has elapsed to show what are the real earnings on the properties consolidated. Where experienced telephone men have had charge of the work—and remain in the management—it is reasonable to suppose that the plants they have grouped together will earn enough to pay interest on the underlying securities. Such men are familiar with conditions and know what is necessary to keep within safe bounds.

On the other hand, the outsiders who broke into the telephone security field with the idea of gaining speculative profits lack this experience, and the effect of their operations is more doubtful. In some instances, plants have been combined in one group and the holding company has sold bonds on the consolidated properties, payment of interest depending on the earnings of the operating units of the group. Just what the earnings will be under the new conditions remains to be seen.

* * * *

As stated before, experienced telephone men handling such propositions are advised of the possibilities. Under their expert management they can know what the grouped plants will yield as well as what they did individually before the merging. Consolidated management of the right kind, of course, often means economy and better profits.

Much depends, therefore, on who the men are who are handling the job. As J. P. Morgan, the elder, used to say with regard to financial risks character is better than collateral.

The advice to investment houses and telephone men, as first sounded last year, is still good: "Stop! Look! Listen!"

COMING CONVENTIONS.

Wisconsin, Madison, Hotel Loraine, June 7, 8 and 9.

Vermont, Burlington, Van Ness House, June 14 and 15.

Washington, Edmonds, June 17 and 18.

Cultivating Exchange Revenues

Various Methods Successfully Used to Secure Adequate Exchange Revenues—Know Your Exchange, Operating Costs, Employes and Your Public and Apply This Knowledge—Address Delivered Before Nebraska Association Convention

By Elliot Belden,

Director, Department of Public Relations, United Telephone Co., Abilene, Kans.

"Exchange Revenues" is a matter which I believe is of vital interest to all telephone men. There is not a great deal to be said on the subject which has not already been mentioned, but on the other hand possibly a little review may be worth while.

We are all acquainted with the Bible, or at least we should be, and yet we go to church Sunday after Sunday, just to be reminded of the Ten Commandments, the 23rd Psalm, The Golden Rule, and many other biblical topics which are a constant source of inspiration.

Know Your Exchange.

For a few minutes now, may we consider the general subject of exchange revenues as our business bible. If I were to deliver a sermon along these lines, my text would be, "Know ye well your business, and your profits shall be plentiful."

To know your business, first of all, you must know the possibilities for developing your exchange. How many prospects do you have for new telephones? How many homes and business houses in your community could be sold extension telephones or small private branch exchanges?

Who are your toll users? What percentage of your subscribers never use long distance? How are you to develop more toll business?

How about line calls? Are you making an effort to obtain additional revenue by featuring this service? Are you making a profit from your telephone directory? Is a systematic effort being put forth at your exchange to grade up the service by replacing wall telephones with desk telephones? By changing party-line subscribers to individual lines?

In this connection of knowing your exchange, here are a few of the practices being observed by the telephone companies with which I am associated: A card record is kept of telephone prospects. Regular newspaper advertising and specially-prepared leaflets are used to get the prospect to install a telephone.

Our cartoon booklet, "It Isn't a Home Without a Telephone" (TELEPHONY of August 7, 1926) is now being used in 22 states. Inquiries about this booklet have been received from Canada and England. I mention this merely as an indication that such a method has merit and, I believe, could be followed to advantage by other companies.

A systematic follow-up of all prospects is essential to the success of a station development project. Personal solicitation, backed by newspaper advertising and booklets is the surest method of getting results.

A plan for selling extension telephones can be worked out along practically the same lines as those followed for adding new subscribers.

Toll development should be an intensive campaign conducted from January 1 to December 31 every year. Newspaper advertising, booklets, explanatory leaflets and personal solicitation may be used. If you know of any other methods, use them, too.

If you have not made a study of your toll revenues to find out who uses long distance and who doesn't, you'll be surprised at the small number of subscribers who are responsible for practically all of it and the large number of subscribers who

never use long distance telephone service.

Line calls brought the United Telephone Co. considerable additional revenue in 1926. We expect to double the amount in 1927. Our experience has been that few persons really know the advantages of line calls and their low cost in comparison with circulation and results obtained.

Personal solicitation of the auctioneer, the local merchants, the picture-show man, those who are putting on special sales, will usually get the line call business.

Directory advertising revenues are an increasing source of exchange profit as merchants are made to realize more and more the importance of the telephone directory as an advertising medium.

Sales helps and suggested copy for merchants enables a solicitor to sell directory space more readily. A sales manual has been found most helpful.

Grading up service as a means of increasing exchange revenues is pretty much the same proposition as increasing toll business.

It is an endless task, requiring untiring effort and constant attention that no opportunity may be missed to remind subscribers of the advantages to be had by using a desk telephone instead of a wall telephone, or by having an individual line instead of being on a party line.

Under the first general subject of knowing your exchange, I would say there are the six possibilities for development to be remembered:

1. Getting new subscribers.
2. Selling extension telephones.
3. Developing more toll business.
4. Selling line calls.
5. Selling more telephone directory advertising.
6. Grading up the service.

Know Your Operating Costs.

It seems to me that the second most important phase of business to know, if you would increase your exchange revenues, is to know your operating costs. This is too big a subject to more than mention, and yet it is a most essential prerequisite for adequate exchange revenues.

Historical novels feature the story of David Crockett and the advice his mother gave to him as a boy when he started West. All through the life of this great guide and frontiersman, we see reflected in what he did the simple lesson learned from his mother: "Be sure you are right and then go ahead."

What an assurance it is to a telephone man to know just how he stands on operating costs; to know, when he makes application for a rate adjustment at his exchange, that the rate adjustment is more than justified by the carefully-compiled facts. "Be sure you are right, then go ahead."

Too many telephone men *think* the rates they are charging are too low when, as a matter of fact, the telephone men should *know* without question whether or not a rate adjustment is needed. If you, yourself, are not sold on the idea that adequate rates are essential to good telephone service, it is not aersonable to expect that your subscribers will be in sympathy with any proposed plan to increase rates.

The surest way, either to sell yourself on the idea that your rates are too low, or to be satisfied that they are satisfactory, is to know what it is costing you

"Know Ye Well Your Business, and Your Profits Shall Be Plentiful," Says Mr. Belden, Who Outlines the Phases of the Telephone Business Which Are Important in Acquiring Adequate Revenues.

to give service. And don't forget that depreciation is a real item of cost—much more real and certain than any other.

I like to think of a case in our territory, one of several that might be mentioned, where the company knew it was right and then went ahead. Service was changed from magneto to common battery. Rates were increased. Instead of losing stations, a nice gain was shown. People want good service and are willing to pay for it. When you give mediocre service which fails to satisfy your subscribers, it isn't worth what they are paying for it, regardless of how small the monthly rental bill.

You can't get away from the old, old saying that a fellow usually gets what he pays for. If you are giving bargain telephone service at $1.98 per month, when a careful study of your operating costs shows that you should be charging $2.50, then you are not only depriving yourself of possible exchange revenues, but you are following a policy which sooner or later will result in unsatisfactory service to the subscriber. You can't continue indefinitely giving something for nothing any more than a telephone subscriber, or anyone else, can get something for nothing.

Like those who would solve the problem of perpetual motion, some telephone men I have known try to run their exchanges successfully and yet lose money. I am here to tell you it can't be done. As the farmer said the first time he saw a giraffe, "There ain't no sich animal." There isn't any such thing as developing exchange revenues if you don't know your operating costs—and all of them.

Know Your Employes.

Do you know your employes? Knowing your employes well enough to win their sympathetic and whole-hearted cooperation in making your exchange a success is another essential factor to be considered under this subject of exchange revenues. In fact, a whole talk could be given on this one topic of employe cooperation in building exchange revenues.

More and more the telephone business demands men and women who can do more than their customary plant or traffic work. They must gracefully assume commercial responsibilities which heretofore have been handled by a commercial department, the manager or the bookkeeeper. To bring about this desired "cut-over" in an organization, a comprehensive educational program should be followed.

We have found employe meetings most effective. At these meetings the employes are called upon to give their experiences and tell how they are selling new telephones, extension telephones or long distance calls. Many helpful suggestions are gained from these group meetings.

Charts, which at a glance show the amount of toll business an exchange is doing, the number of new subscribers or the outstanding uncollected accounts per telephone, are instrumental in arousing interest and should be kept in conspicuous places where all employes can see them.

In connection with these charts, it is well to have a fixed quota which has been determined beforehand, and then show the exchange quota in comparison with what is being done to show the gain over same month of previous year.

Competitive contests among your employes are an effective means of increasing exchange revenue. Get your employes enthused over a contest, and you'll find they get the business.

The outstanding employes in two of our recent contests were not the commercial office fellows, whom you might expect, but a lineman and a "trouble-shooter." I guess you would call the lineman to whom I have referred a "grunt" because he is simply a fellow who digs holes; and yet, in this contest, he proved that he could increase our exchange revenues by obtaining new business.

Employe cooperation is a proposition which may be easily made attractive to employes. It is simply a case of the more money they help the company make, the more money it will mean for them.

Employes like to have their individuality recognized. There is no better way to do this in the telephone business than to give them the opportunity of demonstrating

their special ability along commercial lines.

Know your employes, and you will know new possibilities for developing exchange revenue.

Know Your Public.

Know your public and be sure that they know you. Possibly you wonder why some of your subscribers say they will see you in "Halifax" first before they will stand for a rate adjustment. Their first argument is:

"Well, where is all this big investment you have been telling us about? All I see of your telephone company around our town is a few old poles and a few strands of wire. How do you get that way, saying you have an investment of thousands of dollars?"

At many telephone exchanges in Kansas, and I dare say this holds true in Nebraska, there are subscribers who live and die and never have a conception of a telephone system other than the poles and wire. That's just why our United Companies have adopted a definite policy of holding "open house" at least once every two of three years at all of their exchanges.

On these occasions, special inducements are made to get all of our subscribers to go through the exchange, because we believe this is some of the most effective advertising we can do.

At Manhattan, Kans., more than 6,000 subscribers went through our new automatic exchange during two days of "open house." We estimated that practically every home in the community was represented.

Previous to the "open house," a radical newspaper editor had attempted to arouse antagonism against the telephone company, saying our rates were too high. No effort was made to refute these attacks through the press, though other papers in the community took a reasonable stand on the proposition. We wanted to give the subscribers an opportunity to see for themselves and pass judgment.

After the "open house," there were no sympathetic readers for the radical editor's attacks on the telephone company and, as a result, he discontinued making them.

At exchanges of 800 subscribers we can figure on an attendance of about 600. This has been proved time and again.

Think what it means to have your customers "see behind the scenes" at your telephone exchange. It is really an opportunity to cash in on those thousands of soldered connections which are to be found back of every switchboard. When folks can see the intricate wiring and the delicate equipment required to give them service, they will begin to appreciate the fact that the telephone company is more than a "few old poles and some wire."

In closing, may I stress this one point in particular—that an intelligent group of subscribers is the greatest asset you can have. You'll never have difficulties or grievances from the fellows who understand your problems; it is the man down the side street, who doesn't know what it's all about, who sometimes causes the trouble.

If you know these four phases of your business that I have mentioned—1. Know your exchange and its possibilities for development; 2. Know your operating costs; 3. Know your employes; and 4. Know your public—and then apply this knowledge as any business man would, you may be assured that exchange revenues will not be lacking.

Wide Range of Topics Discussed at Wisconsin Convention.

The program for the annual convention of the Wisconsin State Telephone Association is practically completed. The convention will be held at the Loraine hotel in Madison on Tuesday, Wednesday and Thursday, June 7, 8 and 9.

In addition to President Walter Gallon's address and Secretary W. L. Smith's report, as well as reports by several of the committee chairmen, addresses on other topics will be made.

The outstanding addresses will be:

"Recent Court Decisions Affecting Public Utility Problems," by Lewis E. Gettle, chairman, Wisconsin Railroad Commission.

"Transportation and Communication, Why?" by B. W. Arnold, assistant to vice-president, Chicago, North Shore & Milwaukee Railway Co.

"Dangerous Tendencies of Utility Financing," by Geo. C. Mathews, Wisconsin Railroad Commission.

"The Use of Highways by Public Utilities," by M. W. Torkelson, former secretary, Wisconsin Highway Commission.

"Individual, State and National Responsibility," by F. B. MacKinnon, president United States Independent Telephone Association, Chicago.

"Some Problems of the Small Telephone Exchange," by John A. Pratt, secretary, Consolidated Telephone Co., Madison.

"The Tree Problem in Telephone Work," by Jesse T. Walker, Portage Telephone Co.

"Legislation: Proposed and Enacted by the 1927 Legislature," by J. F. Krezik, general attorney, Wisconsin Telephone Co., Milwaukee.

The annual banquet will be held at the Loraine hotel on Wednesday evening, June 8. Dr. Glenn Frank, president of the University of Wisconsin, will be the principal speaker.

Iowa Professor Conducts Class Over the Telephone.

A new use for the telephone has been found by Professor Charlton B. Laird, head of the department of journalism at Drake University, in Des Moines, Iowa. Recognizing that in many large newspapers the practice now is to have reporters dictate their stories over the telephone to persons in the editorial rooms, Prof. Laird has stationed himself two blocks away from his classroom at the university, and from there conducts instruction in news writing, news reporting and news editing.

Prof. Laird insists that telephone reporting is one of the most important of journalistic experiences. The secret to it is terseness, distinctness and tactfulness. Training to give stories, tips and reporting to editors over the telephone is necessary if the laboratory work is to square with after actual experiences. He lays before his pupils the essential details of hypothetical stories, and later they are expected to call him at his home, and dictate them over the telephone to him in his role of editor.

North Carolina and Georgia Companies in Merger.

A merger of the Independent telephone companies in Franklin, Sylva, Bryson City, N. C., and Clayton, Ga., into a single concern, with its home office at Franklin, N. C., was recently announced by D. G. Stewart, manager of the Western Carolina Telephone Co. at Franklin, N. C.

The new business will operate under the name of Western Carolina Telephone Co., with a subscribed stock of $100,000, of which $65,000 has been paid in. The first figure represents an increase in the company's capital stock of $75,000.

The properties at Sylva, Bryson City, and Clayton have been purchased, and the new company will take charge of the systems in those towns on or about June 1.

The companies absorbed by the Western Carolina Telephone Co. are The Rabun Telephone & Electric Co., Clayton, Ga., the Bryson City Telephone Co., Bryson City, and the Sylva Telephone Co., Sylva.

The new company within the next year will spend approximately $20,000 in equipment, rebuilding, repairs, extensions, and betterments. Actual construction will begin as soon as the material can be assembled and the engineers can complete plans and blueprints. Construction work will be under the supervision of Mr. Stewart, who has been chosen general manager of the new concern.

The new organization is headed by W. B. McGuire, of Franklin, president; Addison Maupin, of Atlanta, secretary and treasurer; Morgan B. Spier and H. L. Jones, both of Charlotte; Dr. J. H. Smathers, of Waynesville, and D. E. Murray, of Sylva, are directors. Mr. Maupin, now retired, formerly was secretary and treasurer of the Southern Bell Telephone Co., and Messrs. Spier and Jones are now connected with that company.

Prices in the Metal Markets.

New York, May 23—Copper—Easy; electrolytic spot and futures, 12.75c. Tin—Firm; spot and nearby, 68c; July, 65.12c. Iron—Steady; No. 2 f.o.b. eastern Pennsylvania, $20.50@21; No. 2 f.o.b. Buffalo, $17.50@18; No. 2 f.o.b. Alabama, $18. Lead—Dull; spot, 6.50c. Zinc—Steady

Here and There in Telephone Work

Telephone Used in Stupendous Bridge-Building Feat.

The installation of a special telephone system from a central command to every subordinate strategic point, recently enabled one of the most stupendous bridge-building feats in history to be successfully carried out. This engineering feat was the raising of a 450-foot span of the Carquinez Straits highway bridge, near Vallejo, Calif., from two steel barges and placing it in position between its two supporting arms 135 feet above the surface of the water.

Hazards and dangers faced the bridge workers during every moment of their giant enterprise, but so carefully arranged and synchronized were all successive steps and details, and so complete was the telephone system used for giving the orders, that the feat was carried through without the slightest hitch or mishap.

The construction of the bridge, which is the longest highway bridge in the world, was divided into five sections. First is the long approach leading from the state highway on the south side. Then there is a center span erected on concrete piling sunk in mid-stream. Third is the Vallejo approach, jutting out from the crest of the hills on the north side of the straits. Two open spaces, 450 feet long, were left between the ends of the two approaches and the center span.

Usually in bridge construction, traveling cranes are used which put the steel girders into place, building the bridge as they go. But the engineers on the Carquinez bridge decided on new construction methods to close these gaps.

They fabricated the two spans on the shore of the straits. The problem then was to float these into place below the finished portion of the bridge and raise them, 135 feet in the air, and fasten them to the superstructure arms.

The first span to be raised was placed in the open space between the Vallejo approach and the center span, which is shown by the arrow at *B* in the accompanying illustration. The span to be placed in this space is shown on two barges at the left. Orders for all movements were given by one man stationed at a point on the Vallejo span indicated by the arrow at *A*.

At this point was installed a special telephone system which extended to all strategic points, where the wires were connected to head sets and chest transmitters which were worn by the various foremen in charge of the crews. By means of this telephone system, the man directing all operations was able to see every movement and to give orders instantly.

The telephone wires were strung across the open space to the center span which enabled the men working on this span to also receive their orders from the man directing all operations.

When everything was in readiness to raise the span into position, orders were given for the tugs towing the barges carrying the span, to get the span into a position beneath the superstructure where judgment of inches spelled the difference between triumph and disaster.

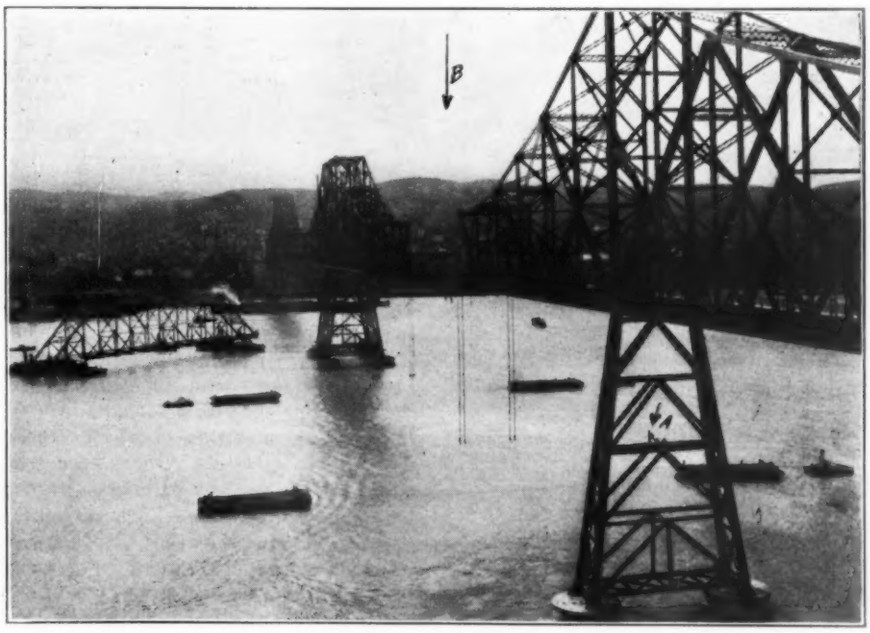
In order to raise the span to the superstructure 135 feet above the water, an intricate system of counter-balances was created. Four huge boxes were filled with sand so that their combined weight was somewhat greater than the weight of the 750-ton span.

These boxes were attached to 2½-inch steel cables which hung from the ends of the approaches and central span. The cables ran through steel pulleys and were wound over a series of drums. After the cables had been attached to the span the boxes were slowly released and their weight served to draw the span into the air.

It was 2:27 p. m. when the span swung clear of the steel barges. Three minutes later, at a command over the telephones, the hoisting began. Slowly, inch by inch and with the most meticulous precision, the great span was lifted to the superstructure arms and there fastened to them with steel pins 12 inches in diameter, each weighing 1,500 pounds.

At 3:15 p. m. the last bolt was shot into place, the 450-foot span having been raised 135 feet in 48 minutes.

A few weeks after the successful raising of the north span, the second span was successfully raised into position on the south side.



The Raising of the 450-Foot Bridge Span, Shown on Barges, to Place in Carquinez Straits Highway Bridge, Near Vallejo, Calif., Was Directed by Engineer at Point "A" Over a Specially-Installed Telephone System.

Concrete Pole Butts Lengthen Life of Wooden Poles.

Rotting butts of wooden poles are a continual source of annoyance to telephone, electric power and street railway companies. Recently a pre-cast concrete butt has been developed that has provided for the salvage of such poles which otherwise would be fit for firewood purposes only.

As a general thing, the portion of the poles which first gives out is that buried in the ground. The decayed portion of the pole is removed and the pole is then inserted in the pre-cast concrete butt. Although this is something new, indications are that poles so repaired will last many years.

A common design for this concrete butt is that of a truncated cone. This cone is reinforced with ⅜-inch by 2-inch bars running the full length of the pole butt which are held firmly in relative position to each other by two rings at the top and bottom of the butt, spot-welded to the reinforcement bars.

The connection of the wooden pole to the butt is made by means of ⅝-inch by 4-inch bars which protrude two feet from the top of the butt. These bars are spot-welded to the longitudinal reinforcement

bars. The top of the pole butt is further strengthened by a ¼-inch by 3-inch steel ring which is in place when the concrete is cast.

One electric railway, for instance, keeps a stock of these pre-cast butts on hand. As soon as decayed wooden butts are noticed, concrete butts are immediately installed. This is done by cutting off the decayed portion of the wooden pole and lifting it out of the ground. This end of the butt is then jacked out and the hole is cleaned. The concrete butt is inserted with about six inches of the concrete exposed above the ground.

The pole is then placed in the butt by a pole jack and is bolted tightly to the two terminals placed at right angles and extending above the concrete butt. This replacement work is, of course, done without the removal of the telephone or electric power wires.

Will Rogers, the Humorist, Comments on Long Distance.

Will Rogers, world famous humorist, has the same difficulty as all other married men when it comes to getting in a word edgewise or any other way, while talking with his wife. This was shown recently at Manhattan, Kans., when he accepted the courtesy extended by the United Telephone Co. of a long distance call to his wife at Beverley Hills, Calif.

After his three-minute conversation, Mr. Rogers came out of the long distance booth with a sheepish grin on his face and said: "I would have talked longer if there had been any opportunity of saying anything. I could hear my wife so distinctly that I was almost afraid to move."

Mr. Rogers was photographed as he was seated at the desk of O. C. Canary, manager of the United Telephone Co. exchange at Manhattan. Before leaving the city he inscribed on the photograph, "Thanks for real service, Will Rogers."

Doing of the "Noon Hour" Club

By J. A. Bracken.

Rap! Rap! Rap! sounded the chairman's gavel—a large glass insulator—as he pounded sharply upon the head of a barrel used for a table by the club's secretary. "The meeting is called to order, so let's get together and hear what Tom, our senior switchboard man, has to say about the central office storage battery. All right, Tom, the gang is quiet and tuned in. Go ahead and broadcast."

"Mr. Chairman and associates," began Tom, "it is well said that for the comforts and conveniences of our daily life we are without doubt greatly indebted to the telephone. The telephone, as we know, is an instrument for the transmission of articulate speech by means of electric current. The word 'telephone' is formed from two Greek words, tele (afar), and phonein (to sound, or to speak) and hence means the 'far speaker.'

"Recalling a magneto exchange and its simple method of operation, one may be inclined to wonder at the need of the modern common battery exchange with its complicated equipment for the production of communication service to the public. But the magnitude of the undertaking makes necessary the greater system; and the system with its practically automatic operations is rapidly taking the place of manual practices.

Will Rogers, Noted Humorist, at Manhattan, Kans., Exchange of United Telephone Co. After Long Distance Call to Wife at Beverly Hills, Calif.

The telephone plant, like other industries, is being constantly developed to the extent that new knowledge is applied in its process. At first, this new knowledge required for the telephone plant development comes from every-day experience of its workers. The knowledge accumulated by telephone equipment manufacturers, and in other industries, has then to be studied so that any information that can be usefully applied is taken advantage of.

The growing knowledge of the arts gave birth to science. The experience and knowledge, for instance, acquired in connection with alchemy gave rise to the science of chemistry. The chemical investigation into the properties of sulphur led to the discovery of oil of vitrol or sulphuric acid.

Every discovery serves as a starting point from which new discoveries radiate, each tending to the establishment of a new industry; for example, the experiments of Plante, a French scientist. In connection with the immersing of two plates of sheet lead in a jar containing dilute sulphuric acid and passing an electric current through the intervening liquid, he produced a secondary or storage battery capable of furnishing a powerful current.

This solution of dilute sulphuric acid is known to us as 'electrolyte,' and is the exciting fluid in a storage battery. The electrolyte, as used in the central office batteries, consists of a mixture of pure sulphuric acid and distilled water.

The quantity of acid and of water used is generally one part of acid to about four parts of distilled water. In mixing, to bring the solution to the required specific gravity, the acid in every instance is poured into the water—never the water into the acid.

The reason for this is that on diluting, a chemical combination is formed, not just a simple mechanical mixture—and heat being liberated, the electrolyte becomes very hot. It is quite dangerous to pour the water into the acid, and under no circumstances should the two ever be so mixed. It is best to wear rubber gloves and goggles to protect the hands and eyes when mixing storage battery solutions.

By 'specific gravity,' is meant density; that is, mass of unit volume or the relative weight of any material compared with water as a basis.

Pure water, therefore, is considered to have a specific gravity of one. One pound of water is approximately equal to one pint. An equal volume of pure sulphuric acid weighs 1.835 pounds. It, therefore, has a specific gravity of this amount and is spoken of as 'eighteen thirty-five.' As it is customary to carry the gravity readings out to three decimal places, the gravity of pure water is written 1.000 and spoken of as one thousand.

Since like most substances, the storage battery electrolyte expands when heated, its specific gravity is affected by a change in temperature. If the electrolyte, which has a certain density at a temperature of 70 degrees Fahrenheit, be heated, the heat will cause the electrolyte to expand.

Although the actual strength of the electrolyte will remain the same as before heating, yet the expansion will cause it to have a higher gravity of nearly one point (.001) for each three degrees rise in temperature; for instance, if the electrolyte has a density of 1.210 at 70 degrees Fahrenheit, and the temperature be raised to 73 degrees, this increase in temperature will cause the electrolyte to expand and the gravity to rise to 1.211. On the other hand, if the temperature had lowered from 70 degrees to 67 degrees, this would have caused the gravity to drop from 1.210 to 1.209.

Since change of temperature does not alter the actual strength of the electrolyte, changing its gravity only, for this reason at the time of taking the gravity reading of the central office battery we always correct the reading one point for each three degrees change in temperature. For convenience, 70 degrees Fahrenheit is considered as normal from which point the corrections are made.

The specific gravity or density of the battery electrolyte is measured by an instrument known as the "hydrometer.' This consists of a closed glass tube in the form of a short, flat barrel with a long stem of

(*Please turn to page* 22.)

Automatic Telephone Fundamentals

This Is One of Series of Articles Explaining in Simple Terms the Mechanical and Electrical Basis of the Strowger Automatic Telephone System, Which Appear Every Week in "Telephony" — Part 20, The Harmonic Party Line System

By Arthur Bessey Smith, Ph. D.

The essentials of a harmonic vibrating system are a mass or weight and a restoring force which always tends to bring the weight back to a neutral position whenever the weight is moved one way or the other from this neutral position. This vibrating system has a natural frequency of its own, which may be maintained by a very weak periodic force, a force so weak that, if its frequency be higher or lower than that of the vibrator, it will not cause the vibrator to move very much.

The harmonic party line telephone bell consists of a tuned reed, a gong or gongs, and an electromagnet. The latter is usually polarized. The alternating current sent through the electromagnet causes it to act on the reed. If the natural frequency of the reed harmonizes with the frequency of the current, the bell rings. If the frequency is too high or too low, the bell will not ring. Of course, there is a certain minimum current below which the clapper will not swing enough to hit the bells, even though the frequency is correct.

The structure of a well-known harmonic bell is shown in Fig. 98. The moving parts are carried by a mounting bracket attached to the poles of the coils. On it is mounted a reed punched out of flat clock spring. This spring, Fig. 99, carries the armature clapper rod and clapper at the center. The clapper rod passes through a hole in the middle of the reed, while the armature is held on by means of a couple of nuts. The assembled vibrator, Fig. 99, is then mounted on a mounting bracket, Fig. 100, so as to place the ends of the armature opposite the poles of the electromagnet.

The reed or spring of the harmonic bell operates by torsion. When alternating current passes through the bell, the armature is alternately pulled down at one end and then at the other. Each time the armature is pulled down, the center of the flat reed is twisted, and this twisting action is resisted because the ends of the reed are clamped rigidly on to the mounting bracket.

The bell is tuned by the maker by choosing the proper thickness of reed and weight of clapper, and adjusting the position of the clapper on the rod. The clapper is not the only weight. The mass of the entire moving parts affects the frequency, but an idea of the differences may be gained from the weights of the clapper used. The following table is not exact because the weights differ slightly from bell to bell.

Multiple Harmonic.

Frequency of Bell.	Weight of clapper. Grams.	Ounces.
16⅔	25.00	0.88
33⅓	4.64	0.16
50	3.35	0.12
66⅔	1.45	0.052
25	9.9	...

The 25-cycle bell was added to make five stations. The non-multiple harmonic system arose after the pole changer was made commercial. It employs 20, 30, 42, 54 and 66⅔ cycles and has no multiple relationship of frequencies.

The frequencies were originally fixed by the nature of the generator used. Directly connected to one shaft, which had a speed of 1,000 r.p.m., were four generators, two-pole, four-pole, six-pole and eight-pole, respectively. Hence, the two-pole machine

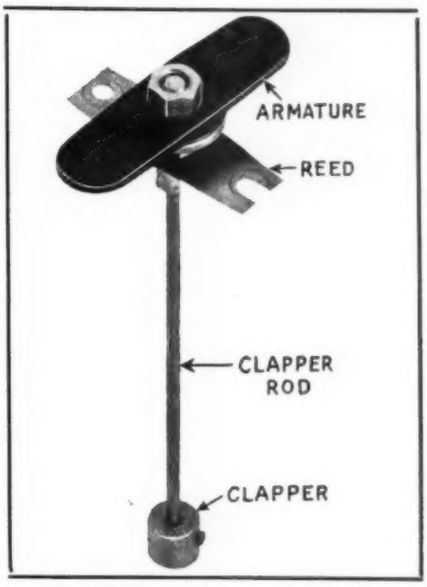


Fig. 99. Vibrator Assembly for the Harmonic Bell.

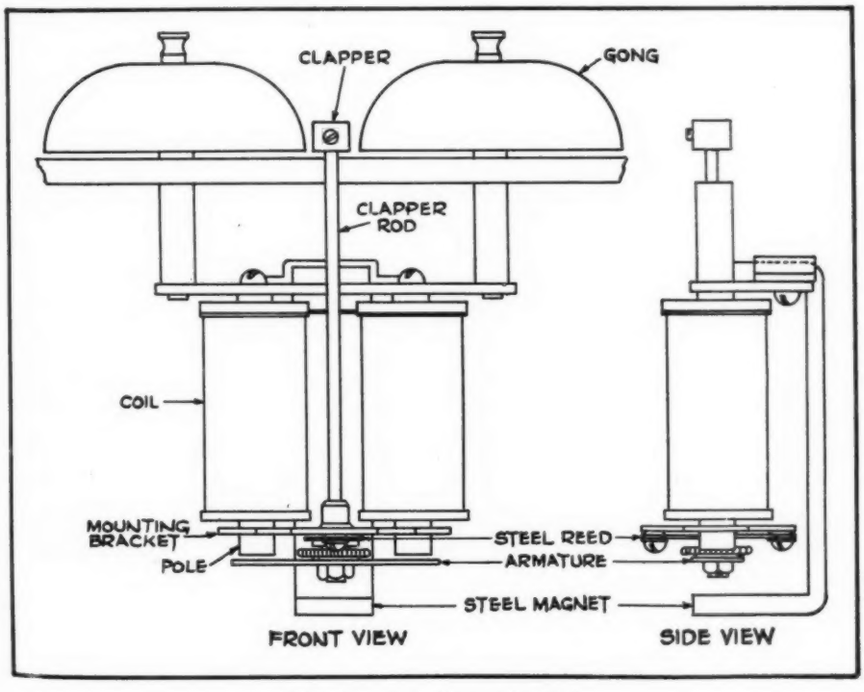


Fig. 98. The Harmonic Bell.

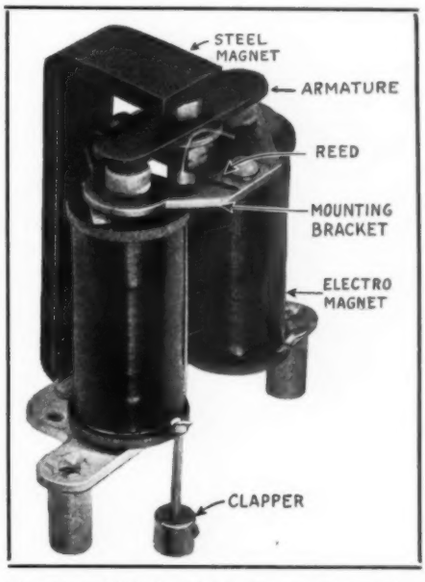


Fig. 100. Vibrator Assembled on Mounting Bracket.

gave 16⅔ cycles per second, and the other two, three and four times that speed. So many bells were in use before the pole changer type of generator gained a foothold, that the original frequencies have remained.

The bells are factory-adjusted and need no further tuning. It may be necessary to move the gongs out or in to secure correct ringing without false signals. This is a matter easily done by any telephone man.

The circuit of a harmonic telephone does not differ essentially from that of a straight line telephone. The bell has in series with it the usual condenser for the purpose of preventing the passage of direct current, although it allows the alternating current to pass through and ring the bell. This condenser is usually of the same capacitance for each of the bells, independent of the frequency. One microfarad is the value used in automatic telephones for party lines.

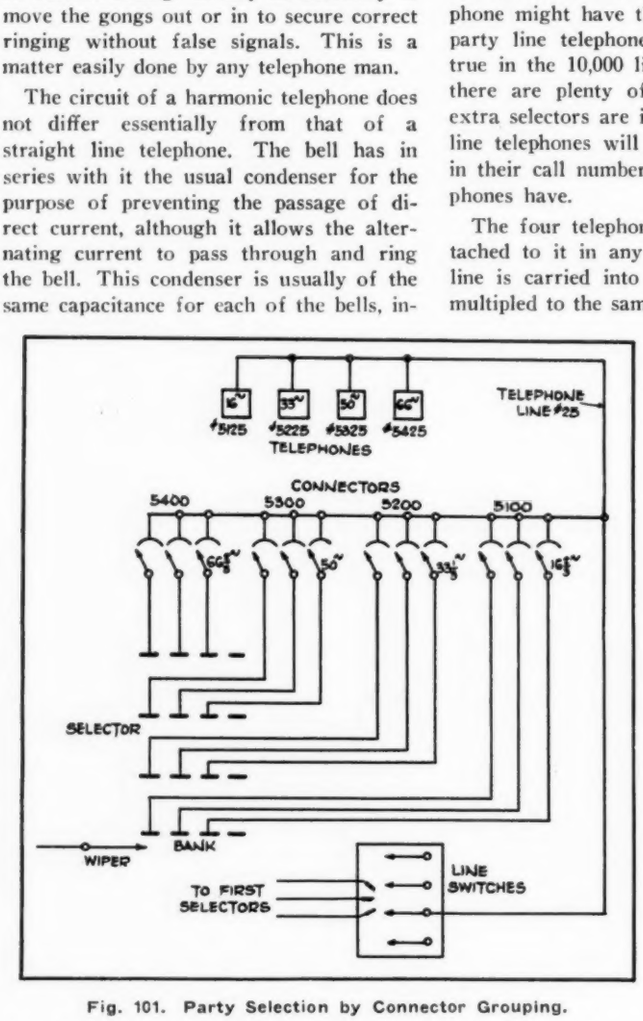


Fig. 101. Party Selection by Connector Grouping.

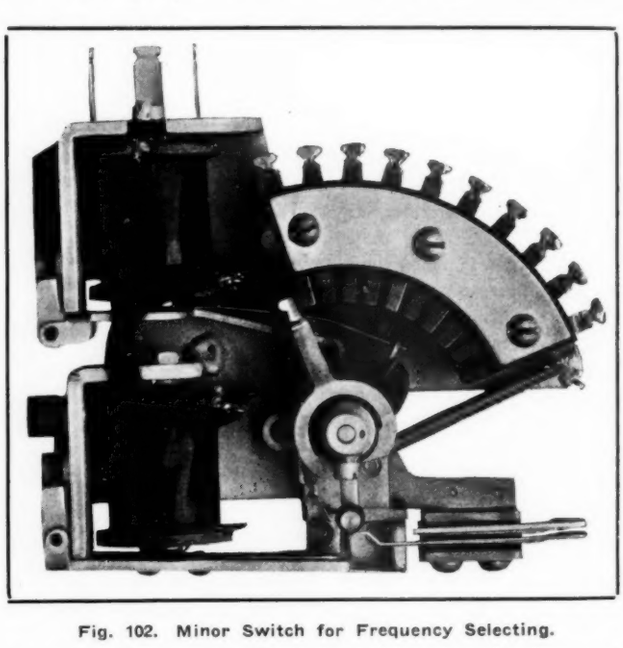


Fig. 102. Minor Switch for Frequency Selecting.

One method of selection of the proper frequency is by arranging the selectors so that they choose different groups of connector switches (Fig. 101). Four groups of connector switches are provided for each 100 four-party lines, having a total capacity of 400 telephones. Each group of connectors is wired for ringing current of a certain frequency and a different frequency given to each of the four groups. Each group is assigned to a certain hundred, and wired to the banks of selector switches.

If we are considering a 10,000-line system, these connectors may be wired to the banks of second selectors. In a case of this kind, the system employs as many directory numbers as there are telephones. These groups of connector switches may be referred to as being in the 5100, 5200, 5300 and 5400 groups, respectively.

If it is desired to economize on directory numbers, third selectors may be installed, and the party line connectors wired to their banks. In this case, each party line telephone will have one more figure in its call number than a straight line telephone will have. That is, a straight line telephone might have the number 2428 and a party line telephone 75325. This is only true in the 10,000 line system. Ordinarily there are plenty of numbers so that no extra selectors are installed, and the party line telephones will have as many figures in their call numbers as straight line telephones have.

The four telephones of one line are attached to it in any order whatever. The line is carried into the central office and multipled to the same contact on the banks of all the connectors in all four groups which serve this particular hundred-party lines. For example, if the line under consideration bears the number 25, it will be multipled to contact 25 on the banks of the connectors in the 5100, 5200, 5300 and 5400 groups.

It is customary to provide about five connectors in each group, making 20 connectors in all. It is seen from this arrangement that each connector of the entire 20 can equally well connect a calling line to this desired party line. Besides the line which we are considering, 99 others may be similarly wired, having a total capacity of 400 telephones.

If we desire to call some particular telephone on line No. 25, we will first select the thousand by operating a first selector. In the present illustration we send five impulses, securing an idle second selector in the fifth thousand.

We next operate this second selector by sending as many impulses as necessary to choose the proper frequency. For instance, if we are calling telephone 5225, the second pull of the dial will move the second selector up to the second level, which will give us one of the connector switches in the 5200 group.

All of the connectors in this group are equipped with 33-cycle ringing current; hence after we have pulled the last two figures of the number—that is, "two" and "five"—we will be connected to line No. 25, and the connector switch will send out 33-cycle ringing current on the line. This current will pass through all the bells, but will be successful in ringing only the bell of the second station on the line.

Had we desired to call some other station on the same line, as for instance the fourth station, our procedure would have been identical with that just described, except that the hundreds digit would be four instead of two, making the call number 5425. Our first selector will choose the fifth thousand and connect us to an idle second connector in that thousand. The second pull of the dial will life the wipers on the second selector to the fourth level, trunking us to an idle connector switch in the 5400 group.

We complete the connection by pulling "two" and "five" on the dial, which will again connect us to line No. 25. This time, however, we will secure 66-cycle current for ringing, because all the connectors in this group are supplied with only this kind of current. The 66-cycle current will, of course, ring only the fourth bell on the line.

For the purpose of taking care of incoming traffic from the party line, there is provided a single line switch. When any one of the four telephones originates a call, the line switch is operated, and the connection established in exactly the same manner as is done in the case of an indi-

vidual line. At the same time that the call is originated, the usual busy protection is placed on the private contacts on all the connector switches in the four groups, so that any call destined for this line will be locked out and receive a busy signal.

The total provision for 100 four-party lines is, in general, as follows:

Five connectors per frequency or 20 connectors in all, 100-line switches, 100 telephone lines, 400 telephone instruments, one switchboard frame to carry all the central office equipment.

It is noticed that although 400 telephones may be brought in on 100 lines, the number of connector switches is doubled. In addition, it is found in practice impossible to secure an average of four telephones per line; therefore, there is not as much saving in these party lines as might be expected, although such saving as exists is a very material factor.

Another method of selecting the desired frequency is to build into each connector a frequency selector and to operate it by a separate digit of the call number, usually the last. The frequency selector, Fig. 102, is a minor switch, which finds other uses besides that mentioned here. The circuit of a connector for this kind of party line ringing, Fig. 103, shows only a few differences from an ordinary connector. The minor switch is represented at the bottom of the diagram by the top and bottom wipers and banks, the motor magnet *M.M.*, the release magnet *Rlse-2* and the off normal springs *O.N.S.-2.*

The motor magnet comes into service after the tens and units digits have been dialed, the wipers are resting on the called line, and the called line has been tested, found clear and seized. While the station-selecting digit is being dialed, the rotary relay acts in parallel with the motor magnet just as it did with the rotary magnet.

The first rotary step of the frequency selector grounds, at *O.N.S-2*, a wire leading to the busy relay, but the slow-acting rotary relay holds the circuit open until the impulses cease. Then it falls back, permitting the busy relay to pull up. This connects—*W* and + *W* to the minor switch wipers, so as to send on to the called line the frequency of ringing current which is on the contacts on which the wipers rest. The revertive ringing tone finds its way to the calling subscriber through contacts on the wiper closing relay, busy relay and ring cut off relay.

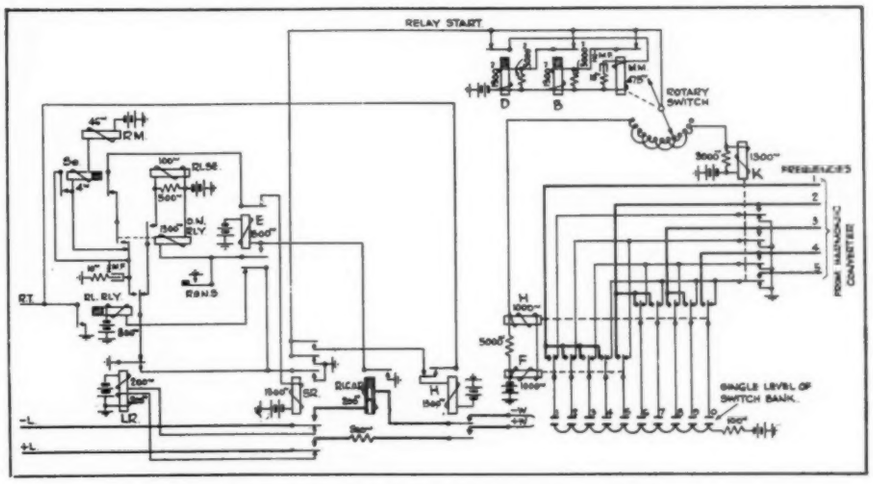


Fig. 105. Circuit of Reverting Call Switch.

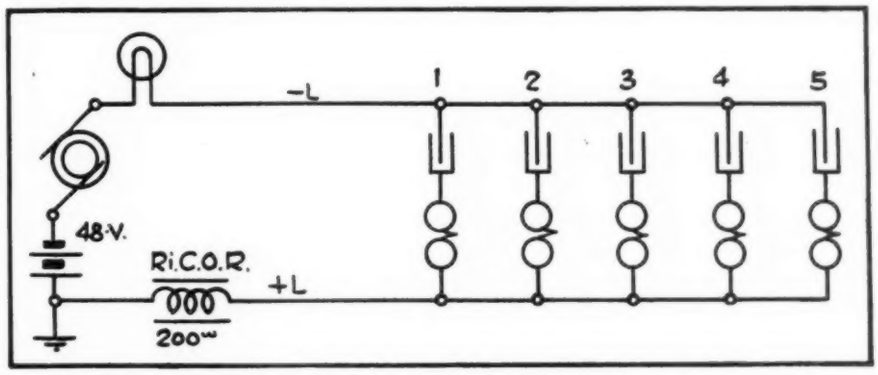


Fig. 104. Simplified Ringing Circuit for Party-Line System.

The simplified ringing circuit is shown in Fig. 104. The 200-ohm winding of the ring cut-off relay is in circuit so as to cut off ringing when the called subscriber answers. When *Ri.C.O.R.* operates, it cuts off the reverting tone, and switches the lines from ringing generator to the back-bridge relay and the calling station. The minor switch is released by a back contact on the release relay, acting through a contact on the busy relay. The release of the minor switch releases the busy relay.

The refrequency selector has ten positions. The first five send out ringing current according to Fig. 104. The second five positions are reversed. This is to permit the operating company to have ten party lines by bridging five stations from —*L* to earth and five stations from + *L* to earth. This gives full selective ringing, though it uses ground connections and tends to unbalance the line.

Occasionally it occurs that a subscriber on a party line desires to call another telephone located on the same party line. This is termed a "reverting" call and is the only case in which the operation of this tele-

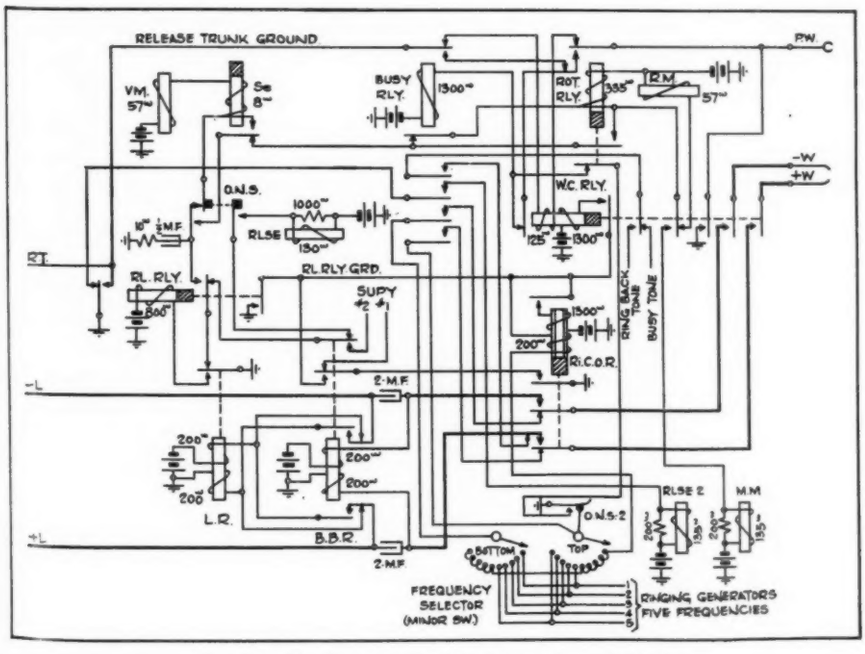


Fig. 103. Circuit of Connector with Minor Switch.

phone differs in any respect from that of a straight line instrument.

Although it is possible to make the switches so that a subscriber may make a reverting call by dialing the regular directory number, it has been found more economical to handle it in one of two other ways. The number of reverting calls is so very small that it does not pay to add an appreciable cost to all the equipment. It has been found that very rarely will the number of simultaneous reverting call connections exceed three for each 2,000 four-party lines.

The two methods most favored for handling reverting calls are: First, to have the subscriber call an operator by a special number, who receives the call and after instructing the subscriber to hang up and release, dials the number in the ordinary way. This causes the bell of the desired station to ring. After waiting a few moments the calling subscriber gets in on the line again and conversation may proceed. The operator may either hold the connection and supervise the call, or may release and allow the two subscribers to converse with each other by means of current derived from the first selector.

The second method is to instruct the subscriber to call a special number, which connects him to a reverting call switch. The latter rings back on the line which is calling.

The reverting call switch, Fig. 105, is arranged to ring alternately the calling and called stations on the same party line. It is like any other major switch except that the wipers rotate over the bank, but have no vertical movement. Ten positions suffice to ring any pair of stations on a five-party line. There is a rotary off-normal spring, *R.O.N.S.* which operates on the first rotary step from normal. There is also a rotary switch (instructure like a rotary line switch) which cooperates with the major switch bank and certain relays in selecting the pairs of frequencies.

The reverting call switch is seized as usual, line relay and release relay operating to ground the release trunk. The digit is dialed and relayed to the rotary magnet by the same arrangement as ordinarily used for vertical magnet. At the end of the impulses, the series relay switches the line relay back contact to the switching relay, *S.R.*

Then the subscriber hangs up. The release of the line relay operates the switching relay, which in turn holds the release relay, *Rl. Rly.*, from falling back, causes relay *H.* to operate and lock, and starts the rotary switch to moving. The relays and magnet attached to the "relay start" wire at the rotary switch have an automatic inter-action which causes the motor magnet, *M.M.*, to step the wipers around in a rather leisurely manner.

The rotary switch operates alternately relay *K* and the relay pair *H-F*. Relay *K* supplies one frequency, relay pair *H-F* another frequency. If the wipers—*W* and + *W* are standing on contact 1, the party line will get frequencies 1 and 2. On contact 5, the line will get frequencies 2 and 3. The circuit device is very clear and easily understood.

When the called station answers, the ring cut-off relay *Ri.C.O.R.* pulls up, operates relay *E* (which locks) and thus unlocks the switching relay, *S.R.*, and releases the entire train of switches. But immediately the party line seizes a first selector, which supplies battery current for talking. The calling subscriber must notice that ringing has stopped and come in on the line, after which conversation proceeds. The reverting call switches are used only while ringing.

There is attached to each party line telephone a card giving the number which must be called in order to ring others on the same line. Such a card reads something like this:

To call the following directory numbers, dial the number set opposite each, hang up the receiver. Your bell and that of the called telephone will ring alternately. When the ringing ceases, remove your receiver and talk.

Number	Call
52351	224
52352	227
52353	229
52354	220

If called party does not answer, lift receiver a moment to stop the ringing.

(*To be continued*)

Doings of the "Noon-Hour" Club.

(*Concluded from page* 18.)

small diameter. Inside of the stem is a graduated scale, and at the lower flat end a few shot are placed.

The hydrometer floats upright in the electrolyte and the point on the scale at the surface of the solution indicates the specific gravity. The temperature of the electrolyte in the storage battery cells is ascertained by means of a specially-designed thermometer, weighted at the bottom so that it will also float upright. It has a scale on the opposite side of the mercury column and parallel to the regular scale, on which the amount of the specific gravity correction is indicated.

That is, opposite to the temperature 70 degrees on the regular scale, is the figure '0' on the special scale, showing that no correction is made at that temperature. Three degrees below 70 degrees is shown 'minus one' on the special scale, indicating that the specific gravity should be corrected at that temperature by deducting one point. Three degrees above 70 degrees is shown 'plus one,' which indicates that the specific gravity at that temperature should be corrected by adding one point to the reading.

The specific gravity, quantity and diffusion of the electrolyte, all have a marked effect on the efficiency of the central office battery, the voltage of the battery being largely dependent on the ratio of diffusion.

Well, boys, my alloted time for this talk is now up, so I shall have to close for the present, but will enlighten you further at some subsequent meeting."

Marconi Predicts World-Wide Telephony for Near Future.

Senator Marconi in a recent interview in London predicted the early application of beam wireless to facsimile transmission over great distances. He said that the experiments had shown that ordinary handwriting, typewriting and printed sheets could be sent by wireless through space.

A recent trial in England had been very successful, he said, and soon the contents of sheets of paper could be flashed as easily from London to Melbourne, Australia, as they are now being sent from Oxford to London. The inventor also thought that beam wireless promised a great development in wireless telephony.

"A new telephonic apparatus for communication with Australia has been built," he said, "and soon the whole empire will be on the telephone, for I am planning stations for South Africa, India and all of the British dominions.

"With the Australian beam wireless service in operation over the longest possible distance that can be covered on the globe, it is obvious that an immense advance has been made in world-wide communication and that there will be a cheapening and a speeding up of all long distance transmission.

We hope soon to have England linked up with the United States, Argentina and possibly China and Japan with beam wireless."

Senator Marconi said that it took an 18th of a second to transmit to Australia, and that tests had shown that 150,000 words could be sent daily in each direction at a speed of 325 words per minute.

"Furthermore," he said, "recent tests between Montreal and England have not only shown the perfect adaptability of the beam system to wireless telephony, but also a certain imposing of the commercial telephone channel upon our existing high-speed telegraphic service, thus obviating the cost of erecting separate stations for telephony.

"The commercial advantages of such a development as the beam system make possible an enormous saving, and the opening of the first multiplex telephone and telegraph service will be epoch-making."

"Know Michigan" Window Displays of Michigan Bell.

"Know Michigan" is the title of a series of interesting window displays exhibited by the Michigan Bell Telephone Co. in one of the show windows of its Washington Boulevard building, Detroit. Eighteen cities already have been selected, according to their population.

Improvement Plans of Companies

Telephone Companies in Various Parts of Country Plan on New Exchange and Office Buildings, Rebuilding of and Extensions to Outside Plant and Installation of Equipment—Underground and Aerial Cable Replacing Open Wires

General Manager Agee of the Lincoln Telephone & Telegraph Co., has announced an extensive new construction program for Lincoln, Neb., the headquarters city, where more than 22,000 patrons are now being served. The city has enjoyed an unusual growth during the past three years, both in the business and residence sections. Business block building has lagged behind home building, but two big skyscrapers are now being finished, and two others are about to be begun.

"The telephone company in a growing city," says Mr. Agee, "has a very direct interest in the expansion and development thus going on. Under modern conditions, if intelligent foresight is to be employed, a telephone company must have accurate knowledge of the probable growth.

"It must know the future needs of a particular district, and it must be able to order its major supplies from 10 to 12 months in advance. When new subdivisions are platted, we attempt to determine how rapidly they may or will be sold and developed—which means a fairly correct knowledge of what the telephone demands will be over a definite period."

Within the last few years there has been an extensive residence development, with some suburban business growth, 50 houses going up last year. Cable capacity became overcrowded, and the company is adding aerial and underground cable, together with pole and wire replacements and additions. Cable and extension work is going on in three other parts of the city, at a cost of $10,000. One new skyscraper, 12 stories high, has been equipped with complete cable and facilities this spring. Some of the outlying cables carry as high as 600 pairs of wires.

The company is spending several thousand dollars, making a new cable entrance at the headquarters building in order to accommodate the new cable extensions, and is also spending a similar amount in replacing the equipment in the main building for protection against foreign electric currents, which become more menacing as heavy voltage transmission lines multiply.

Companies in all parts of Ohio plan extensive improvements during the year. These will be in the form of construction of new exchange buildings, installation of new switchboard equipment and additions and extensions to outside plants. The Lorain County Telephone Co., Lorain, intends to spend approximately $100,000 for underground conduit and cable also one new building, with automatic equipment. A new building costing $50,000, and equipment costing $100,000 is planned by the Athens Home Telephone Co., of Athens.

The plan of the Williams County Telephone Co., of Bryan is to spend $15,000 for underground cable and $5,000 in aerial wire construction.

From $5,000 to $20,000 are the estimated capital expenditures of various other Ohio companies, to be used for making service extensions, underground cable, extensions to plants, etc. Some of these companies are the Ashtabula Telephone Co., the Sidney Telephone Co., the Logan Home Telephone Co., the Greenville Home Telephone Co., the Champaign Telephone Co., the Conneaut Telephone Co., and the Hudson Telephone Co.

In Wisconsin, the Portage Telephone Co., at Portage, will install three miles of underground conduit and approximately four miles of cable at an estimated cost of $20,000. About $1,000 will be expended for the inside plant. About $75,000 will be expended by the Rhinelander Telephone Co., at Rhinelander, for an exchange building and installation of a complete new central office equipment of a 1,000-line capacity. In addition to this, the outside work will necessitate the expenditure of $5,000.

The directors of the Barron County Telephone Co., of Rice Lake, Wis., plan to make a start on a $25,000 reconstruction and addition program covering rebuilding of toll lines in various parts of the territory served by the company.

Manager E. B. Rhodes of the Home Telephone Co. at Fordyce, Ark., announced the plan the first of the year of spending about $5,000 for construction work which he intended to carry out early in the spring.

The Union Telephone Co. of Owosso, Mich., W. J. Melchers, general manager, announces, will rebuild about 60 miles of long distance pole line and string about 90,000 pounds of bare copper wire for additional toll circuits, and will reconstruct several small exchanges, enlarging and rebuilding the cable plants. About $25,000 will be spent on rebuilding part of the rural system. The company's schedule for the season's work amounts to about $125,000.

About $5,000 will be expended by the Highland Telephone Co., Highland Mills, N. Y., for outside reconstruction.

The Dixon Home Telephone Co. of Dixon, Ill., will install 6,000 feet of underground cable and 4,000 feet of new conduit during the year. When this is completed, the company will have 110,000 feet of underground cable and 20,000 feet of aerial cable, being nearly five-sixths underground. Improvements to the switchboard were made the early part of the year. The total expenditures approximate $10,000.

Management to Eliminate Waste.

If we follow the eight rules on "How to Manage," by W. H. Leffingwell, many of our problems on the elimination of waste will be solved. Continually putting these into practice, and always having them in mind when establishing our procedures and work controls, will assure us of progress in eliminating waste. They are:

1. Define your purpose. You must know what is to be done before you can know how. This is your master task.

2. Analyze your problem. Your master task will then break up into many detail tasks. Consider them all—neglect none.

3. Seek the facts. Study every condition governing each task, find the undesirable element to be eliminated and the desirable element to be retained. Then standardize right conditions.

4. Devise the one best method. Aim to conserve energy, time, space, material. Determine relation of details to the master task.

5. Find the person best fitted. For each task, certain personal qualities are essential. In each person certain qualities predominate. Find the person best fitted.

6. Teach the person best fitted the one best method. Not by driving but by thorough, patient teaching are understanding and skill developed.

7. Plan carefully. Right planning of arrangement and sequence of work will enable you to accomplish tasks in logical order, accurately, quickly, economically.

8. Win cooperation. Cooperation means working together. It cannot be demanded; it must be won. Accept your share of the responsibility. Respect the rights and aspirations of others.

This is scientific management, and through scientific management may we expect to eliminate waste.

Moore System of Caro, Mich., Plans Expansion.

A further expansion of the Moore Telephone System, Caro, Mich., is in process which is expected to include the purchase of exchanges in a number of towns sur-

rounding Caro. From Manager W. J. Moore the following particulars have been obtained.

Some time ago permission was obtained from the Michigan Public Utilities Commission to bond the present system for $100,000 and bonds were issued to provide for a modest expansion. Before the bonds were sold, opportunity was offered to secure by purchase the property formerly owned by the Valley Telephone Co., which was absorbed by the Michigan State, and which the Moore System controlled under a lease running ten years at a total rental of $24,000. Sale of the bonds was stopped pending negotiations, and this has just been completed, the title passing to the Moore Telephone System.

The property consisted of the exchanges at Caro and Wahjamega which the engineering department of the commission appraised at a reproduction value of $80,543. The Caro property includes underground conduits and cables covering the entire business district. The Moore system has constructed underground conduits to its central office building, and will immediately install a cable which will greatly increase the capacity and satisfy the demands for private lines of users who have been compelled to use party lines.

The Wahjamega exchange is of the automatic type, requiring no switchboard operator.

In order to properly finance the larger program and secure funds for the purchase of exchanges now practically closed, the Moore System will be incorporated with an authorized capital stock of $1,000,000 and issue bonds for $500,000. The bonds will be offered for sale only in such amounts as are required to pay for properties as acquired, and to connect, unify and improve all exchanges and connecting pole lines.

Mr. Moore claims to be the only man in Michigan who has been in continuous control of a telephone property since the invention came into common use. When the present program is carried out it will place him near the top of managers of Independent companies in Michigan.

Michigan Bell to Add 12 Stories to Headquarters Building.

The general headquarters building of the Michigan Bell Telephone Co., Detroit, will be increased to 19 stories by the addition of 12 floors. This is part of the Michigan Bell company's general program for 1927, which calls for the expenditure of approximately $27,000,000.

Growth of Detroit and other cities of the state and their expanding need for telephone service have been such that the company has found it necessary to erect many new buildings and to enlarge several others. In Detroit, company officials present figures to indicate that the use of the telephone is growing even more rapidly than the city's industries and population.

President Burch Foraker said construction work would require about 15 months. The building now houses, besides general headquarters of the company, its local business offices, the Cadillac and Randolph machine switching central office units and the engineering, division and general accounting offices. The enlarged building, which will be 320 feet high, is designed to house a number of other central office units, all of the machine switching or dial telephone type, and toll and long distance offices.

The present building, constructed in 1917, 1918 and 1919, at a cost of $2,400,000, was so designed that 12 more stories could be added. These additional stories will bring the usable floor space to a total of 314,000 feet, compared with present usable floor space of 122,000 square feet.

Other buildings projected for immediate action by the company include central office and executive and business office buildings at Flint and Jackson. Central office structures were erected in the vicinity of Detroit during the past year, at Roseville, Redford, Wyandotte, Trenton, Plymouth and Ypsilanti, and one is under construction at Royal Oak.

Three large new buildings, total cost of which will be considerably more than $1,000,000, are being erected in the Detroit exchange area, one at Plymouth Road and Grand River, one at Whipple and Van Dyke and one on Highland, between Woodward and Second. Additions have been built at a number of other points.

Successfully Carrying the Telephone Story to the Public.

The Lincoln Telephone & Telegraph Co., Lincoln, Neb., is receiving a great many favorable reactions from the series of service demonstrations that it has been carrying on in various parts of its territory. Not only have the people responded in surprisingly large numbers, but the newspapers have carried many columns of stories about them.

It has been found possible to greatly interest patrons in all size exchanges. In the smaller exchanges, where the magneto boards are used, many groups have been given an insight into what is going on behind the scenes at the switchboard, a knowledge of the technical operation of an exchange and all about what happens when a call is put up.

The demonstrations cover a wide variety. The uses and abuses of a telephone are shown, what happens when a person listens-in on a line, what chaos is caused by the person who puts in a call and then is too impatient to wait until somebody answers, together with the proper placing of long distance calls.

Commercial Superintendent Bell has received a great many letters of appreciation, showing the public interest and the satisfaction that comes with a closer knowledge of the workings of service. Educational playlets and motion pictures form part of the evening demonstrations. The company has a full corps of men trained to present the features in acceptable form, and they have all learned the parts well. At each demonstration a booklet giving a brief history of the company as well as of the exchange where the demonstration is being given are distributed.

One of the big hits was scored by K. B. Cary and L. B. Doane in a demonstration before the 1,500 students of the Lincoln high school, in connection with the officials of the industrial arts department of the school.

Mr. Cary explained the peculiar character of service that a telephone company gives, pointing out that when one buys goods he has a chance to examine them, but with telephone service, equally personal, if a call is interrupted one can only imagine what has happened. He demonstrated with a miniature central office, Mr. Doane explaining the mechanism of calls. Motion pictures and the playlets proved to be big hits.

Indiana Company Sold to Goodrich Interests of Franklin

The Whiteland Telephone Co., Whiteland, Ind., has been sold by the receiver to the Goodrich interests for $12,000. Samuel F. Surface, of Bargersville, receiver, has operated the plant for the last few months.

The Whiteland company owned and operated the exchanges at Whiteland and Needham. The Franklin Telephone Co. was bought recently by the Goodrich interests, making all exchanges in Johnson county under the control of the Goodrich interests. According to the present plans, no change will be made in the Whiteland management. Elmer Boone will continue as manager.

The Whiteland company was forced into receivership on a suit filed by I. N. Brown and Charles Brown, both of Johnson county, stockholders. They alleged that the plant was mismanaged, and that a receivership should be appointed to protect creditors. It is reported the amount received in the sale, $12,000, will not cover the indebtedness.

American Visitors to England Make Most Transatlantic Calls.

Radiophone talks between America and London are rapidly increasing with the advent of United States visitors to London. It has been found that a large proportion of the calls from London are made by American business men staying there.

Twenty-six calls to New York and elsewhere in the United States were made one day recently from one London hotel, and all by American business men.

An American staying at a leading hotel paid for his telephone talks to Chicago 4½ times as much as his hotel bill. One conversation alone cost him £55.

THE AMERICANS

THERE are two main features in the American character; absorption in business and idealism. They exhibit a strong eagerness for betterment, and firm faith in its possibility. They are open-minded; inclined for adventure and experiment.

Americans have the reputation of being "dollar worshippers." In truth they respect money simply because they have a high regard for the qualities by which it is earned.

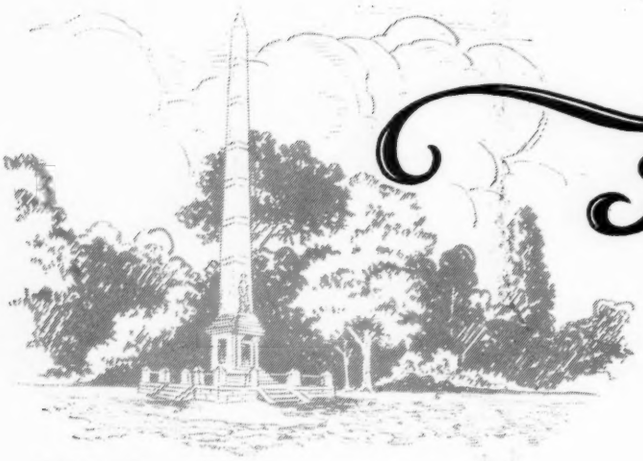
They are more susceptible to what hypnotists call "suggestion" than any other nationals, and when once possessed by an idea, they are ready to carry it out fully.

The world owes the automatic telephone idea to America, and all forms of automatic are imitations of "Strowger" developed in Chicago 30 years ago.

Upwards of 3,500,000 Strowger Automatic Telephones installed or under construction throughout the world

"ATM" Strowger

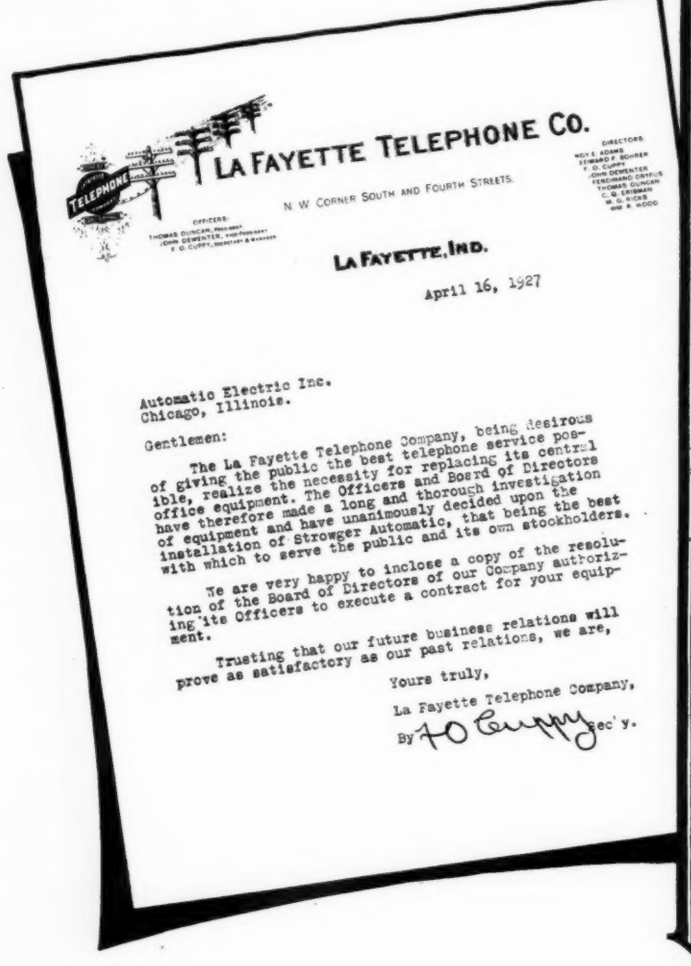
AUTOMATIC TELEPHONE MANUFACTURING COMPANY, LTD.
STROWGER WORKS, MILTON ROAD, EDGE LANE, LIVERPOOL
Associated Company
INTERNATIONAL AUTOMATIC TELEPHONE CO., LTD., LONDON



Soldiers Monument on Tippecanoe Battle Ground, La Fayette, Indiana

For La Fe

A New Era Te



LA FAYETTE TELEPHONE CO.

N. W. CORNER SOUTH AND FOURTH STREETS.

LA FAYETTE, IND.

April 16, 1927

Automatic Electric Inc.
Chicago, Illinois.

Gentlemen:

The La Fayette Telephone Company, being desirous of giving the public the best telephone service possible, realize the necessity for replacing its central office equipment. The Officers and Board of Directors have therefore made a long and thorough investigation of equipment and have unanimously decided upon the installation of Strowger Automatic, that being the best with which to serve the public and its own stockholders.

We are very happy to inclose a copy of the resolution of the Board of Directors of our Company authorizing the Officers to execute a contract for your equipment.

Trusting that our future business relations will prove as satisfactory as our past relations, we are,

Yours truly,

La Fayette Telephone Company,

By F O Cuppy Sec'y.

LA FAYETTE Tele Indiana, has rece Electric Inc. of Chicag 6000 line Strowger Au existing manual offices

In adopting Strowge ette Telephone Comp and rapidly growing companies which reali progress is dependent telephone service wh since this is true, they any service but the m possible to obtain.

It is generally recog equipment gives the h of convenience, speed The fact that it does for operating and ma major reasons for Telephone Company.

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Automatic

Factory and General est V

ette, Indiana

a Telephone Service Begins

Tel mpany of La Fayette, ecen ted with Automatic ica r the installation of a Au ice to replace the two fices Main.

owg equipment, La Fay- mp ed itself in that large ing rogressive telephone reali ir future success and ent upon the quality of wh nder the public; and, the ing to offer the public e m nd accurate that it is

ecog Strowger Automatic he h ssion to modern ideas eed in telephone service. oes minimum expenditure ma xpenses is one of the for ence by La Fayette any.

TELEPHONE
LA FAYETTE TELEPHONE CO.
N. W. CORNER SOUTH AND FOURTH STREETS
LA FAYETTE, IND.
RESOLUTION OF THE BOARD OF
DIRECTORS
of the
LA FAYETTE TELEPHONE COMPANY
BE IT RESOLVED: by the Board of Directors of
the La Fayette Telephone Company that the
Directors authorize and direct the President
and Secretary to execute a contract with
Automatic Electric Inc., of Chicago for new
central office equipment including dials on
telephones.

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Message Rate Service In Strowger Systems

(Two Party Line, "Booster Battery" Registration)

by H. R. PARSHALL

Director of Technical Publications, Automatic Electric Inc.

The accompanying illustration shows, in schematic form, the circuit of the controlling equipment associated with each outgoing primary lineswitch trunk serving two-party message rate lines. This figure also shows the message registers and register selecting relays associated with the lineswitch; and parts of the telephone and lineswitch circuits essential to two-party line message rate service.

Space does not permit a detailed description of circuit operation in this article, therefore, it will be confined to "operating requirements" and "salient features." It is assumed the reader will have no difficulty in tracing the detailed operation of this circuit by checking the operation and features listed herein.

The operating requirements are as follows:

(a) Arranged to select the proper message register and record all "completed" calls.

(b) Arranged not to record "free," "official," "busy," and "no answer" calls. (By "free" calls is meant "information," "repair clerk," "toll recording," "fire," "police," etc.)

(c) Arranged to permit "revertive" calls and to make no charge for same.

(d) Arranged to pass "class of service" tones through from the lineswitch, to the toll recording operator.

The salient features of this circuit are as follows:

(a) The lineswitch selects an idle trunk repeater and extends the talking pair and the "release" and "meter" leads through to the repeater, when a call is initiated.

(b) Connects ground, through the 1.5 ohm winding of the retardation coil, to the "in" release lead to hold the primary lineswitch operated and to "busy" the trunk against intrusion from other calls, when the trunk is seized.

(c) Connects ground to the "hold" lead to busy the trunk at the master switch and to hold the secondary lineswitch, in case secondary lineswitches are employed, when the trunk is chosen.

(d) Extends the trunk through to a secondary lineswitch or a first selector, as the case may be, and places a high impedance bridge across the trunk toward the switch train ahead.

(e) Determines whether a direct ground or ground through 1,000 resistance shall be used for controlling message register selection, at the time the dial is rotated off normal.

(f) Shunts the high impedance bridge during the dialling period.

(g) Repeats the dial impulses to the switch train ahead.

(h) Equalizes dialling conditions by shunting the windings of relays "K" and "E" during dialling period.

(i) Removes all attachments or bridges from across the talking pair, thus providing clear circuit when the call is answered.

(j) On completed calls, it connects ground or ground through 1,000 ohms to the meter lead, depending on whether the call was initiated at the station which does not ground the tip side of the line or the station which does, when the dial is operated off normal.

(k) Operates message register "M-1" when ground is connected to the "meter" lead or operates message register "M-2" when ground through 1,000 ohm is connected to the "meter" lead.

(l) Locks the message registering circuit so the register can be operated only once for each completed call, irrespective of whether the receiver at the called station is restored to the hook switch and again removed before disconnection occurs.

(m) Holds the switch train ahead during the entire period of connection.

(n) Releases the switch train ahead and the lineswitch and restores the trunk repeater to normal when the receiver of the "calling" station is replaced on the hook switch.

(o) Prevents operation of message register in case called station is "busy" or there is "no answer."

(p) Prevents the operation of the message register on "free" calls.

(q) Arranged to operate relay "D" and clear trunk of attachments on "revertive" calls, thus providing a metallic circuit for ringing currents.

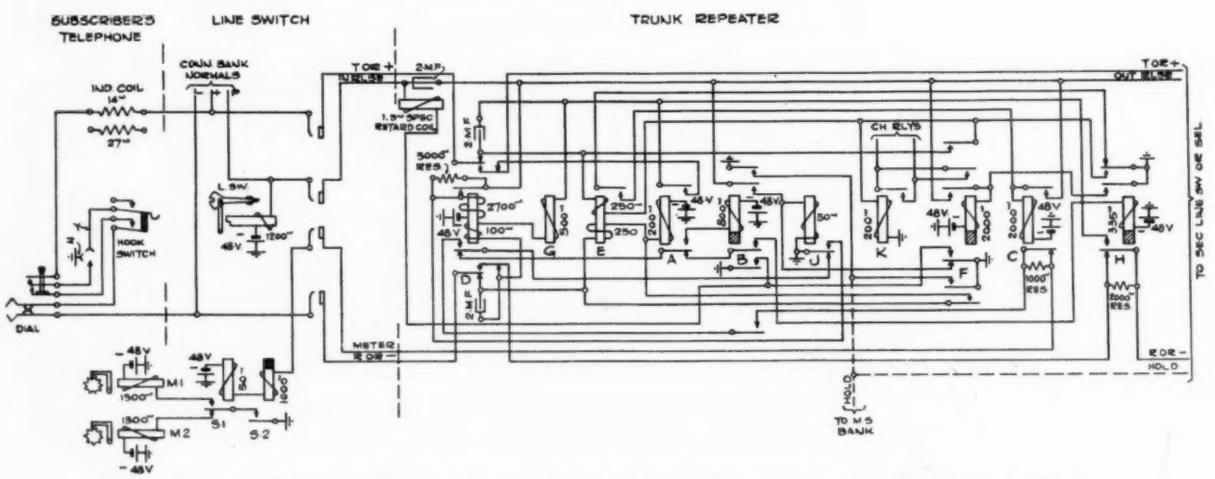
One of the stations on two-party message rate lines is arranged to connect ground to the tip side of the line, as shown by "Z" wiring in the accompanying illustration. The other station is wired in the standard manner, as shown by "Y" wiring; this permits the trunk repeater to differentiate between stations initiating the calls.

Since the trunks to the "information," "repair clerk," "toll recording," and "auxiliary operators" switchboards or desks are not arranged to reverse the battery polarity when the call is taken up and the connectors serving "official lines" are also arranged not to reverse battery, differential relay "D" of the trunk repeater will not operate on these classes of calls.

For the reason that this trunk is not cleared of bridges and is not switched through, battery for transmission purposes is supplied to the "calling" station on all "official" and "free" calls from the trunk repeater and the two 2 M. F. condensers connected into the talking pair serve to keep the battery supply to the "calling" station separated from the battery supplied to the trunk from the switch train ahead.

"Reverting call" switches are usually designed not to reverse battery for the reason that the number of "revertive calls" are exceedingly few, and it is felt that it is desirable to permit the repair men and installers to use the "reverting call" switches for making sub-station ringing tests and adjustments, therefore the "reverting call" switches employed when two-party message rate service is rendered must be designed so that when the "reverting call" switch is selected ground will be removed from the "Out" release lead and ground through 100 ohms will be connected thereto, thus permitting "revertive call" relay "J" to operate and in turn switch the trunk through without recording the call.

It will be noted that the "In" and "Out" leads are connected together by a 2 M. F. condenser and that ground is connected to the "In" release lead through a 1.5 ohm retardation coil; this arrangement permits "class of service" tones being extended over these release leads to the toll recording trunks. If "class of service" tones are not employed this condenser and retardation coil may be omitted.



This is the second part of No. 20 of a series of articles prepared by members of the Engineering Staff of Automatic Electric Inc., covering technical features of the Strowger Automatic Telephone System.

Grows With California Community

Steady Growth Features History of Monrovia Telephone & Telegraph Co., California—Twenty-Fifth Anniversary Marked by Installation of Stromberg-Carlson Super-Service Switchboard—Telephones Increased from 154 to 2,600

By S. K. Beecher,
Advertising Dept. Stromberg-Carlson Telephone Mfg. Co.

When Joel M. Baldwin started the Monrovia Telephone & Telegraph Co. at Monrovia, Calif., in 1902, there were only 145 telephones connected with the central office. Today, 25 years later, there are over 2,600 telephones.

This is but one of the many important accomplishments of Mr. Baldwin in the Independent telephone field, which has commanded his interest since the early days of the industry. Born in New York state and educated in the public schools at Malone, N. Y., he arrived at young manhood just at the time when Independent telephone companies were beginning to be thought of as practical business ventures.

Determined to grow up with the infant industry, he went to Cincinnati, Ohio, where he secured employment with the Fitzsimmons Telephone Mfg. Co. After spending a year in studying its products and methods, he moved to Chicago in the employ of the Western Telephone Construction Co.

When he had completed a year with this company, he felt that his experience was sufficient to warrant his entering in the organization of an operating company. His first position was as manager of the Richmond Telephone & Telegraph Co. and the Richmond Water & Light Co. at Richmond, Ky.

The five years during which he managed these companies, were prosperous ones. At the same time he organized and put on a good operating basis, exchanges at Owensville and Versailles.

At last the urge of the Western coast overcame him and in 1902 he went to California to inaugurate a system of telephones that serve a very important section on the outskirts of Los Angeles. He has organized companies and built exchanges at Monrovia, El Monte, Arcadia, Sierra Madre, Burbank and San Fernando.

These companies have all prospered and are doing a good business. Two or three of them have been taken over by the Bell interests, while the others are operating Independently. The affairs of three of them are still directed by Mr. Baldwin, who is general manager of the Monrovia Telephone & Telegraph Co., vice-president of the Sierra Madre Telephone & Telegraph Co., and manager and vice-president of the San Fernando Telephone & Telegraph Co.

The Monrovia Telephone & Telegraph Co. has enjoyed a healthy growth since its establishment in 1902, which has resulted in the recent installation of a full feature super-service switchboard by the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y. The new equipment will give the subscribers better and faster service, will increase operator efficiency and will be economical to maintain.

General Manager J. M. Baldwin, Who Has Successfully Organized a Number of Companies in Southern California, Is a Busy Man, as This View of His Office Shows.

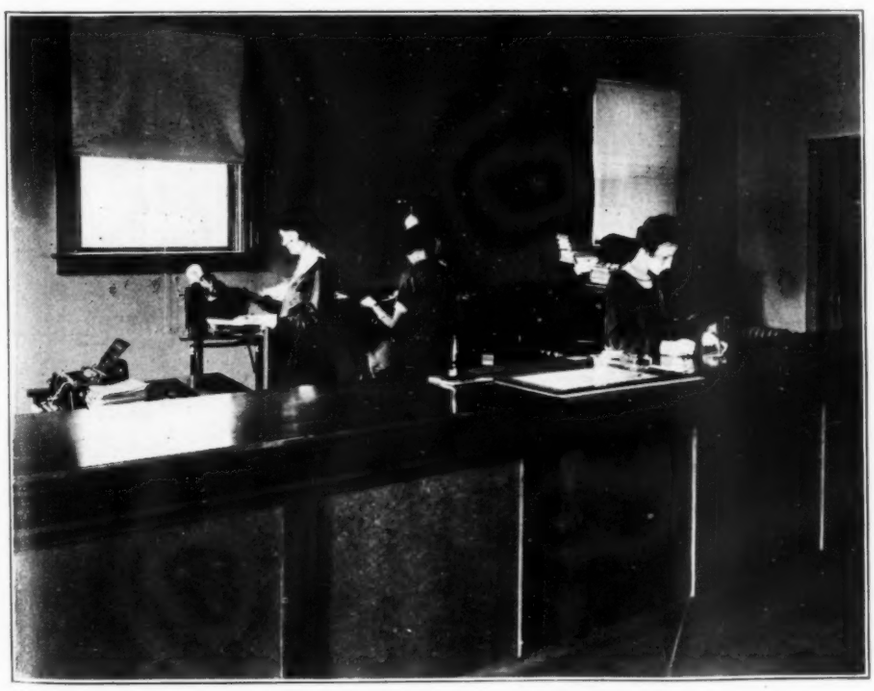
The switchboard consists of seven, three-panel sections, which include one toll, one toll and rural and five local sections. Complete equipment is in place for 900 subscribers' lines, two rural lines, and 16 toll lines, with an ultimate capacity of 3,000 lines.

The regular subscribers' connecting cord circuits are of the super-service type having a master key control. This cuts down the number of selective ringing buttons from 75 to 5 in each position, which greatly simplifies the work of an operator, enabling her to handle more calls with less fatigue and greater accuracy.

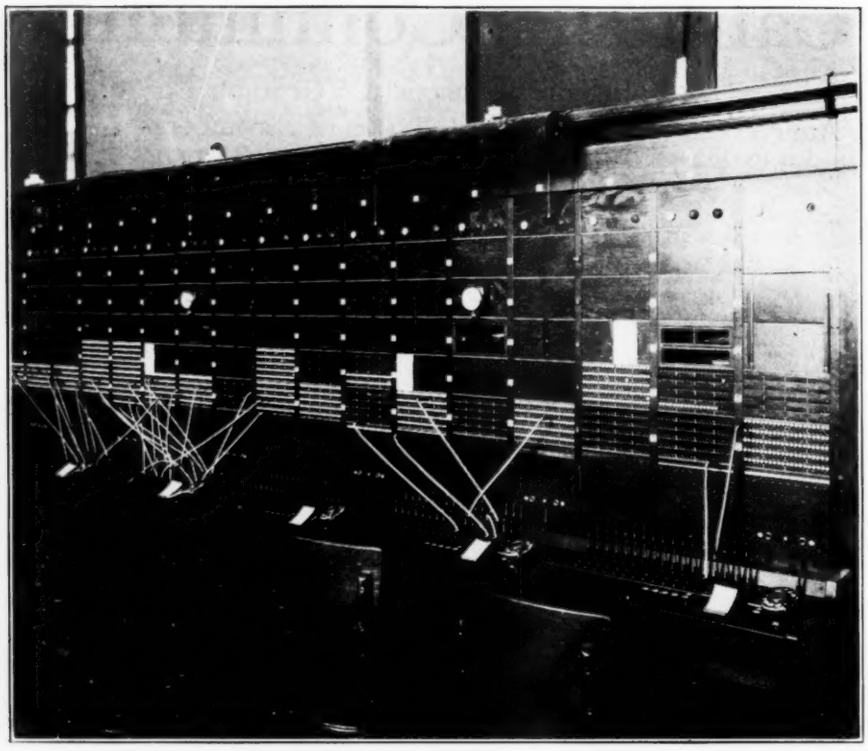
The simplification of keys decreases the cost of maintenance, also depreciation, as the control is done by means of relays which will outlast several switchboards and still be in good operating condition.

The super-service cord circuits for the local positions consist of three-conductor plugs, three-conductor cords, cord weights, double lamp supervisory signals, one master, four-party ringing key, controlling relays, condensers and associated apparatus to provide the following features:

(a) Operator's Listening—Eliminates the use of listening keys with the answering cords. The operator is automatically



Business Office of the Monrovia Telephone & Telegraph Co.



Super-Service Stromberg Carlson 7-Position Multiple Position of the Monrovia Telephone & Telegraph Co., Monrovia, Cal. An Additional Section Has Been Ordered to Take Care of Expected Future Demands.

cut in on plugging-in with the answering cord. The position dial and the operator's telephone circuit are automatically connected to the calling cord when the plug is inserted in a tandem trunk jack or a subscribers' multiple jack. The dial is automatically disconnected when a ringing key on the "non-ring" is pressed.

(b) Operator's Cut-Off—Operator is cut off instantaneously on completing the connection after setting up the ringing condition.

(c) Advance Plugging-In — Operator can plug up a second line so as to be ready for a second call, instantly on releasing the first connection.

(d) Operator's Listening Indication—The answering supervisory lamp burns dim, indicating to the operator the cord to which she is connected.

(e) Operator's Bar—Operator cannot make connection to a line on which a conversation has been established.

(f) Operator's Secret Service—No means are provided for an operator to listen upon an established connection.

(g) Audible Busy Test—Guards against connections with a busy line. Busy test common is individualized to the cord circuit; therefore, trouble on a single cord circuit cannot affect the remaining cords of a position.

(h) Master Ringing—No individual ringing keys are required. One master key is provided for each position. Operator needs only to depress the proper frequency button required in completing the connection.

(i) Machine Ringing—After depressing the master key button, ringing starts. As soon as the ringing starts, the master key is cut off. The subscriber's telephone bell is rung intermittently. This relieves the operator of all ringing supervision.

(j) Ringing Tone—Indicates to the calling subscriber that called subscriber is being signaled. This tone is uniform and distinctive. Its use reduces the number of recalls which usually result when the called party is slow to answer.

(k) Instantaneous Generator Cut Off—Discontinues intermittent ringing instantaneously when called party responds. This applies to either the silent or ringing period of the signaling cycle.

(l) Calling Subscriber's Ringing Control—Discontinues intermittent ringing instantaneously when calling subscriber abandons call.

(m) Reverting Call Ringing—A subscriber may be rung by using the calling cord only. Eliminates the use of reverting jacks.

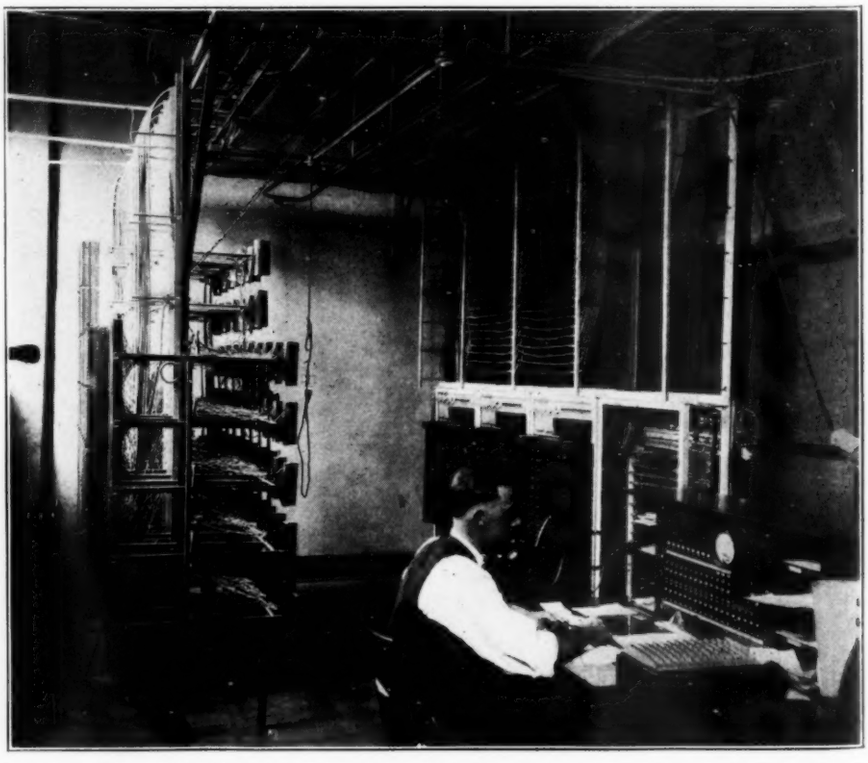
(n) Dark Keyboard—Supervisory lamps are dark as soon as intermittent ringing begins.

(o) Positive Supervision—When either party of a connection returns his receiver to the hook, the cord supervisory light associated with his telephone lights.

(p) Flashing Recalls—Calling subscriber regains operator's attention by a flashing signal on the answering supervisory lamp while the subscribers' line is "plugged up." Flash recall can be instituted only after the called party has "hung up" thereby preventing accidental recalls.

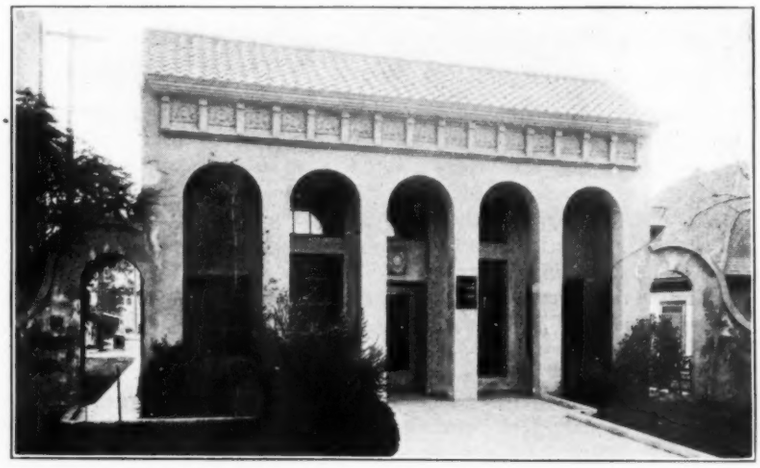
(q) Call Registration—Automatically registers each answered call. Subscriber's receiver must be off the hook to operate the meter.

The cord circuit relays are arranged one



View of the Terminal Room of the Monrovia, Calif., Company, with a Glimpse of the Wire Chief's Desk.

circuit per plate, and terminated so that the plate can be removed for testing or replacements without the use of a soldering iron. This flexible feature is designed primarily for the convenience of maintenance as it allows trouble to be cleared quickly without any disturbance to the operator.



The New Exchange Building at Monrovia, Cal.

This arrangement also makes a substantial saving in cost of installation, as all circuits are wired complete in the factory and a very small amount of time is required to connect the wires extending from the circuit plates to the switchboard.

The relay equipment is carried on four bays of combination cord and line relay racks, located in the terminal room. This arrangement has a distinct advantage in that it relieves the switchboard of unnecessary equipment and thus allows more freedom for maintenance.

All line and cut-off relays are the Stromberg-Carlson No. 190 type. This relay is used in preference to other types, not so much on account of the convenience and economy of space it offers, due to its small size, but more to its rugged construction and freedom from operating trouble.

All major equipment for the exchange, with the exception of the M. D. F. and power board, is new and supplied under a single contract with the Stromberg-Carlson company. The old battery equipment is supplemented by 12 cells of Electric Storage Battery Co. type P. T. battery to provide a total of 48 volts. A General Electric three-ampere Tungar rectifier of the full-wave type supplies current for charging batteries.

Uses of the Telephone As a Business-Getter.

C. W. Motter, director of publicity for the Lincoln Telephone & Telegraph Co., Lincoln, Neb., has an interesting article in the current issue of the Nebraska Merchant, detailing how the telephone may be used in securing business otherwise lost. Among the achievements in the company's territory that he lists, are these:

A newspaper advertising salesman secured $700 worth of business in one day talking to prospects over the telephone; a grocer increased his trade 25 per cent by making a practice of calling customers during his dull hours and advising them of desirable things he had in stock; a men's ready-to-wear store started off a special sale with a bang by telephoning leading men of the city what it had to offer; a Lincoln music dealer sells phonograph records to customers by having them listen to them being played over the telephone.

A Nebraska tire dealer employs two girls to spend their entire time telephoning car owners, and lands one sale out of every four calls. During her dull moments a young woman telephone operator sold last year $4,000 worth of automobile accessories for her employer. The service department of a Lincoln automobile dealer calls all customers once a month to learn how their cars are running. A department store calls its customers whenever new apparel for women arrives. Gas and electric companies use it to invite women to cooking demonstrations, all with excellent results.

On rainy days the clerks in a department store use the telephone to sell hosiery, household aprons and other items that women buy. A coal dealer has doubled his trade by using the telephone to sell winter supplies of fuel in summer time, including former customers who have strayed away in his itinerary by wire. Merchants and service companies constantly urge in their advertisements the use of the telephone by customers.

"Selling is selling, no matter what may be the object to be sold," says Mr. Motter. "The specific method to be used varies according to the type of commodity and the conditions under which it is sold. But selling principles are the same, whether it is personal salesmanship, printed salesmanship or telephone salesmanship. Hence the effectiveness of telephone selling depends upon the power of the spoken word, just as advertising depends upon the appeal of the written word.

"It will be seen, therefore, that effective speech is the vehicle by which the telephone salesman must convey his thoughts and cause the listener to visualize his products to the end that a favorable decision will be reached. A few significant ideas that have been found to be useful and effective aids to securing business over the telephone are: Knowledge of the goods, knowledge of human nature, personality, tact and sincerity.

The telephone, in its wide range of adaptability, makes its extended use a subject of interest to both retail and wholesale merchants everywhere. In order to conduct successful selling by telephone there must first be established a systematic plan of action to be carried through to completion.

One of the first steps toward efficient telephone salesmanship is a thorough analysis of the telephone service in the retail store, wholesale house or any business where the telephone is used by either buying or selling forces. The commercial survey bureau of our company is organized and maintained for the single purpose of making a study of telephone requirements with a view to enabling the subscriber to obtain the greatest possible value, and its experts are available for determining and demonstrating how its commercial user can build a bigger business."

State Uses Telephone to Catch Automobile Thieves.

As an aid to police in their war on automobile thieves, the state motor vehicle department at Atlanta, Ga., has inaugurated a new 24-hour-a-day long distance telephone service.

An operator is always on duty and when ownership of any Georgia automobile or license plate is in question, either in the state or elsewhere, telephoning the department makes its identification a matter of only a few minutes. It has been found that the new system greatly accelerates recovery of cars.

Important Fashion Note for Telephone Operators.

The girls in the Cherokee, Iowa, office of the Northwestern Bell Telephone Co., ten in number, have cut the high cost of dressing and made themselves just as chic as can be, by wearing gingham uniforms during service hours.

They made these themselves during their regular rest periods under the supervision of the office matron. Other Bell offices are following suit, since their pictures have appeared in the company magazines. This is evidently a development of the smock idea, which has become so prevalent among office girls during the past two years.

The Financial Side of Companies

Items of Interest Regarding Financial Matters of Independent and Bell Telephone Companies—Facts and Figures from Annual Reports Show Healthy Growth of Industry — Activities in Construction Work — Some Statistics

Company at Redding, Calif., Operating at Loss.

The Sacramento Valley Telephone Co. which operates in Redding and vicinity, reported to the California Railroad Commission its 1926 operating revenue at $109,308.01, as compared with $107,499.85 for 1925. The operating expenses, excluding taxes for 1926, were reported as $118,194.45 and at $108,009.27 for 1925, leaving the net operating revenue of $8,886.44* for 1926, and $509.42* for 1925.

During 1926, taxes charged to operation amounted to $7,094.87 and for 1925 to $6,901.15. Deducting the taxes leaves operating income of $15,981.31* for 1926, and $7,410.57* for 1925.

Adding to the operating income, the non-operating income of the company and deducting non-collectible revenue and rents, results in a gross corporate income, which represents the amount available for interest, amortization of debt discount, other fixed charges, non-operating expenses, dividends and surplus, of $16,740.95* for 1926, and $8,125.07* for 1925.

*Loss.

Large Expenditure of Cincinnati Bell Service Improvement.

The program of construction for the betterment of the service to the subscribers of the Cincinnati & Suburban Bell Telephone Co. provides for expenditures in excess of $3,000,000 during 1927. This was announced by Bayard L. Kilgour, president, in his annual statement to the stockholders of the company at their annual meeting.

In 1926, $2,944,942 was spent in the extension, betterments and additions to the company's plant and equipment, he stated.

The report shows that the net station gain in subscribers' stations was 4,009 during the year, making a total of 170,537 as of December 31. The volume of traffic handled during the year showed a material increase, reflecting the stable business conditions throughout the company's territory.

The average number of originating exchange calls per day was 920,692, as compared with 882,426 in 1925. Continuous and most exacting tests show that this greater volume of traffic was handled most satisfactorily and the quality of the service was fully up to the highest standards, President Kilgour pointed out. He also complimented the employes for their cooperation, loyalty and efficiency.

Under the employes' benefit plan of the company there was distributed $66,789.11 during the year, in pensions, disability and death benefits.

Charles J. Livingood was elected a director to fill the vacancy caused by the recent death of Alfred J. Becht. Other directors who were re-elected are: Charles W. Dupuis, Walter S. Gifford, Ransom C. Hall, Bayard L. Kilgour, George W. Lewis, Benjamin T. McBurney and Charles P. Taft.

The balance sheet shows total assets of $29,439,397.77. The income statement for the year ended December 31 follows:

Telephone operating revenues		$8,112,875.76
Telephone operating expenses		5,293,910.00
Net telephone operating revenue		$2,818,965.76
Deductions:		
Uncollectible operating revenues	$ 67,895.93	
Taxes assignable to operations	829,217.84	
		897,113.77
Operating income		$1,921,851.90
Net non-operating income		60,749.98
Total gross income		$1,982,601.97
Deductions:		
Other interest	$ 5,603.21	
Rent and miscellaneous	47,648.35	
		53,251.56
Balance net income		$1,929,350.41
Dividends	$1,466,232.00	
Other appropriations from net income	50,000.00	
		1,516,232.00
Balance for corporate surplus		$ 413,118.41

Manitoba Government Reports Steady Gain for Five Years.

The annual report of the Manitoba Government Telephones, which has headquarters at Winnipeg, Canada, records improvements in all departments of the system over 1925.

There have been continued improvements during the last few years, which, it is said, evidences the fact that the system has reached a stage where it may be considered on a permanent self-supporting basis. From 1922, surpluses have been earned as follows:

1922	$32,273.66
1923	40,348.28
1924	55,988.41
1925	148,940.06
1926	203,030.47

The total revenue for the past year amounted to $3,330,267.77, an increase of $137,425.30 over 1925. However, fixed costs, depreciation and interest were $1,432,224.14 against $1,357,357.02, an increase of $75,267.12 and while current expenditures increased slightly by $8,067.77, it is at once evident that had large economies not been effected since 1922, the present satisfactory condition from a financial viewpoint would have been impossible. The total savings in maintenance and operation costs from 1922 to 1926 were $570,719.23. In 1921 controllable costs amounted to $2,265,332.00, falling to $1,694,613.00 in 1926. The next surplus after deducting all costs for the year totalled $203,030.47.

The largest expenditure of the year was in connection with the conversion of two remaining manual exchanges in Winnipeg to automatic operation. The total amount spent in the city was $298,556.28, while $117,154.72 was expended throughout the rest of the province.

Winnipeg now has the distinction of being the first large city in Canada to have complete automatic service. An interesting effect consequent to the adoption of this service is the increase in the number of conversations; comparing the previous manual system with the present full automatic, it was necessary to increase switching facilities for an equal amount of lines by over 20 per cent, which means that amount of automatic telephone conversations over those manually handled.

"There is a great economy in the elimination of operating costs representing a saving of $7.50 per line," says J. E. Lowry, commissioner of the Manitoba system, "or approximately $250,000 per year on an equivalent amount of lines manually operated, taking all charges into consideration."

The three outstanding events for 1926 throughout the province were: the inauguration of full automatic service in Winnipeg; the opening up of telephone communication to the Lake Head cities, and the erection of a direct telephone circuit between Chicago and Winnipeg.

During the years from 1922 to 1927, the net surplus multiplied seven times. Economies and improved methods of operation have saved over half a million dollars, and the gross improvement since 1921 which showed a deficit of $538,438.00, approximates three-quarters of a million dollars.

Communication was opened up to 57 new districts. Service was improved and general reconstruction carried on throughout the province to a point where each is second to none and the city of Winnipeg now has the most modern system in the Dominion. Another result is, that while the plant value has increased by 20 per cent the number of employes has been decreased by 45 per cent.

Annual Meeting of Home Company of Fort Wayne, Ind.

The policy of stockholder education, adopted several years ago by Vice-President and General Manager Frank E. Bohn, of The Home Telephone & Telegraph Co., of Fort Wayne, Ind., was faithfully carried out in the annual stockholders' meeting of that company held in Fort Wayne on April 4.

Twenty large charts, displaying in graphic form the activities of the company and general business and industrial conditions in Fort Wayne during the past several years, were displayed before the stockholders, in order that they might understand more fully the problems that had been met and solved by their company during the past year.

Charts relating strictly to company affairs dealt with revenues and expenses and their distribution, taxes, wire mileage, plant and station growth, etc. Charts relating to the growth of the city of Fort Wayne and general business and industrial activities gave information regarding building permits, street-car passenger, postal receipts, telephone calls, electric light and power, etc., etc. This latter display informed the stockholders in a general way of the methods employed in forecasting future service requirements and in preparing to fill them.

Among the interesting points brought out in Mr. Bohn's annual report was the fact that during 1926 the telephone operating revenues of the company exceeded $1,000,000 for the first time in the history of the company. The 1926 balance sheet totals amounted to almost $5,000,000.

Of the total wire mileage of the entire property including toll lines on December 31, 1926, 71.8 per cent was in underground cable, 21.2 per cent was in aerial cable, and 7 per cent in aerial wire.

The net station gain average for the past ten years has been 1,705 stations per year. A total of 29,503 stations were in service on January 1, 1927. More than 77,000,000 calls were made over these telephones during the year 1926.

The stockholders unanimously re-elected the entire board of directors to serve during the ensuing year. Immediately after the stockholders' meeting, the new board of directors met and re-elected all of the former officers: Charles M. Niezer as president of the company; Frank E. Bohn, first vice-president and general manager: August E. C. Becker, second vice-president: O. Marahrens, secretary, and Max B. Fisher, treasurer.

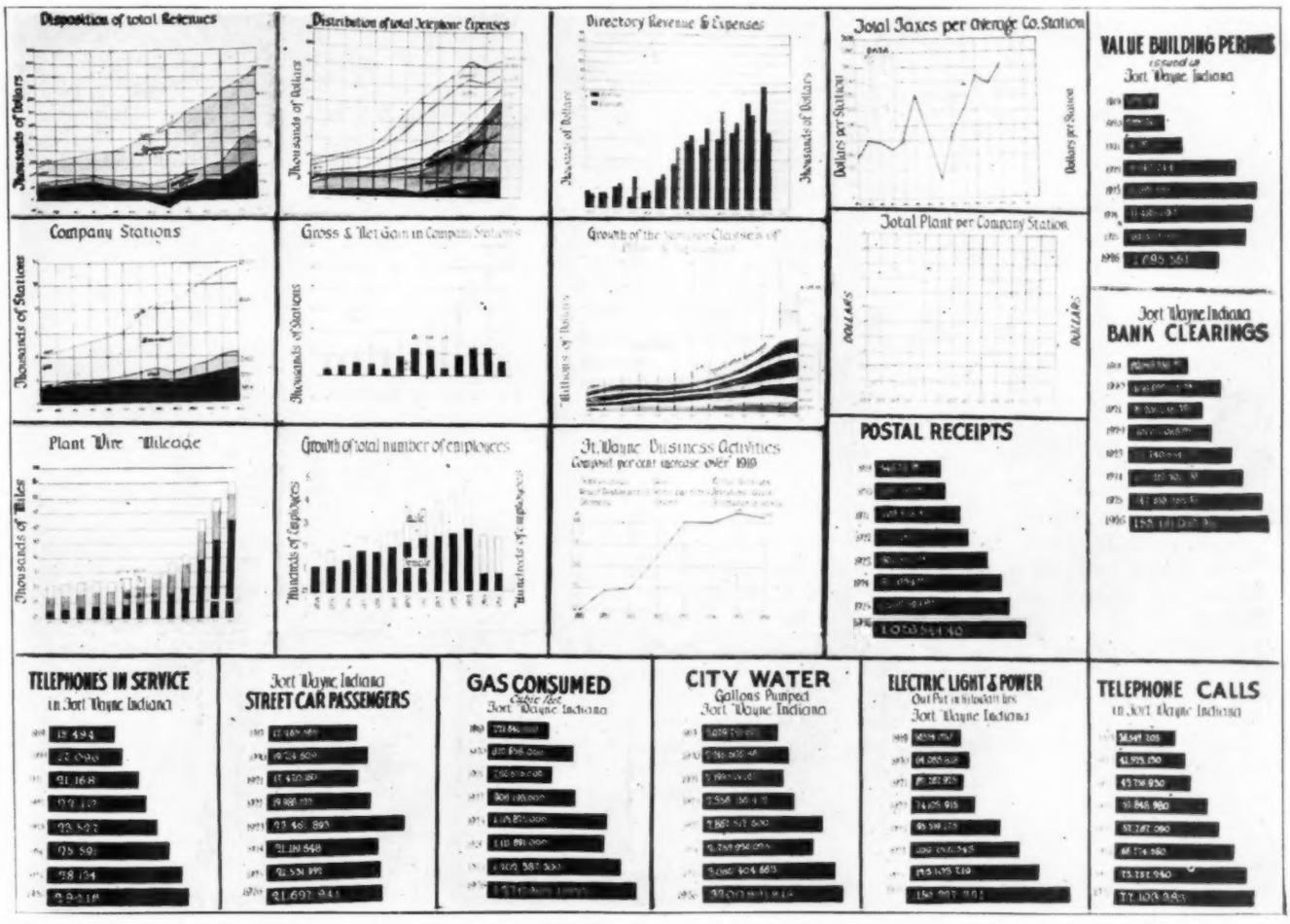
The year 1926 was the first full calendar year under automatic operation, and was one of the most prosperous years the company has ever known. The 1927 budget contemplates the expenditure of $550,000 for additions and improvements to the plant including a new warehouse to cost approximately $100,000.

Year 1926 Not As Good As 1925 for California Company.

Los Gatos Telephone Co., operating in Los Gatos, reported to the California Railroad Commission its 1926 operating revenue at $44,164.53, as compared with $39,488.82 for 1925. The operating expenses, excluding taxes for 1926, were reported at $29,490.01, and at $24,923.60 for 1925, leaving a net operating revenue of $14,674.52 for 1926, and $14,565.22 for 1925.

During 1926 the taxes charged to operation amounted to $3,514.51 and for 1925, to $3,080.05. Deducting the taxes leaves operating income of $11,160.01 for 1926, and $11,485.17 for 1925.

Adding to the operating income, the non-operating income of the company and deducting non-collectible revenue and rents, results in a gross corporate income, which represents the amount available for interest, amortization of debt discount, other



Charts Displayed Before the Stockholders of the Home Telephone & Telegraph Co., Fort Wayne, Ind., Showing the Activities of the Company and the General Business and Industrial Conditions in the City During the Past Several Years.

fixed charges, non-operating expenses, dividends and surplus, of $11,160.01 for 1926, and $11,485.17 for 1925.

Bell of Pennsylvania Had Good Year in 1926.

Operating revenues of the Bell Telephone Co., Pennsylvania, in 1926 were $56,340,022, an increase of $5,709,823 over 1925. Net revenue after expenses was $16,610,872, an increase of $2,543,751. Balance net income after rents and interest was $9,384,585, an increase of $1,097,626. Balance for corporate surplus after dividends was $1,33,773.

Telephones in use increased by 53,937, to 998,330. Investment in plant increased from $207,365,488 to $221,641,214. Daily local telephone calls averaged 4,405,585 in 1926 and toll calls averaged 212,260 daily.

Company at Madison, Neb., Shows Good Record for Year.

The annual report of the Madison Telephone Co., Madison, Neb., in which the Continental Telephone Co. owns 5,829 shares, or control, made to the Nebraska State Railway Commission, shows that the corporation began the year with a fixed investment of $152,859 and total assets of $194,550.

The company has $50,000 preferred stock and $50,000 common stock outstanding. Notes payable were $27,000; accounts payable, $886. It has a depreciation reserve of $33,067 and a surplus of $27,411. The profit and loss account, after paying dividends of $5,907.63, stands at $4,843.

Exchange revenues for 1926 were $33,796 and toll $4,162, with a total operating income of $38,419. Maintenance costs for the year were $12,406; traffic, $6,935; commercial, $6,531, a total of $25,872. The operating income was $12,875. Taxes paid were $1,319, interest, $758, miscellaneous, $48, and dividends $5,907.63, leaving $4,842.94 to be passed to surplus.

J. H. Agee, of Lincoln, is president; W. L. Lemon, of Lincoln, treasurer, and C. E. Pearse, of Madison, secretary and manager.

Operating Results of a Continental Subsidiary Company.

The Monroe Independent Telephone Co., Albion, Neb., one of the companies that recently passed into the hands of the Continental Telephone Co., is now officered by H. C. Bratt as president and manager; J. H. Agee, of Lincoln, vice-president, and W. L. Lemon, of Lincoln, secretary and treasurer. In its annual report to the Nebraska State Railway Commission, it shows a net operating income of $15,979, of which $1,688 was paid for taxes, $1,300 for interest and $12,990.99 passed to profit and loss.

The Monroe company serves a group of eight cities and towns in Platte and Boone counties, and has in excess of 3,300 stations. Its report shows a fixed investment of $233,305, and total assets of $252,872. It has an authorized common stock issue of $139,443; notes payable, $20,400; accounts payable, $562; depreciation reserve, $50,249; surplus, $23,047, and profit and loss of $12,990.99.

Its exchange revenues, divided almost equally between farm and town subscribers, were $53,525, toll $8,008, and a total revenue of $62,943. Maintenance costs were $23,609; traffic, $14,458; commercial, $8,897, and total operating expenses $46,964, leaving a net operating income of $15,979.

Increased Earnings by Northwestern Bell Shown in First Quarter.

Substantial improvement in gross and net revenue is shown by the Northwestern Bell Telephone Co. in its report for the first quarter of 1927 as compared with the corresponding period a year ago. Total assets of the company now are in excess of $104,000,000.

Exchange revenues for the three months were $5,068,754, an increase of $260,717; toll revenues, $1,938,719, an increase of $62,142, while miscellaneous revenues were $194,095 an increase of $24,921. Total revenues were $7,201,568, an increase of $347,780, or 5.07 per cent.

Operating expenses were $2,837,216, a decrease of $5,790, due in part to the increase of machine switching. Maintenance was $1,1116,207, an increase of $94,917; depreciation reserve, $1,111,010, an increase of $30,833; taxes, $585,837, an increase of $22,129. Total expenses were $5,650,272, an increase of $142,089.

Net earnings from operation were $1,551,296, an increase of $205,691, but sundry earnings dropped $30,192 to $179,285. This left for interest, taxes and dividends, $1,721,126, an increase of $175,499. Interest payments were but $4,278 compared to $62,391 a year ago due to the fact that the American Telephone & Telegraph Co., owner of the Northwestern, took stock for the notes payable it held.

Dividends on the preferred stock, carrying 6.5 per cent, were $73,177 for the quarter, while dividends on the common stock, at 8 per cent, were $1,300,000. This left a surplus of $353,726, an increase of $160,495.

The telephone earnings to plant in service rose from 6.27 per cent to 6.86 per cent, while the net profits for the common stock, after payment of preferred dividends, increased from 9.19 per cent to 10.18 per cent.

The revenue per station increased from $4.13 to $4.15 per month. The average number of stations in service was 578,340, and 19,332 have been added since December 31 last.

Nebraska Company Reports Increased Earnings Over 1925.

The Cuming County Independent Telephone Co., of which J. W. Richmond is the active head and principal owner, reports to the Nebraska State Railway Commission that at the beginning of the year it had a fixed investment of $107,306, with total assets of $110,737.

It has $61,797 common stock outstanding, held by 261 different citizens. C. P. Thompson, a heavy stockholder, is president; Paul Wupper, vice-president; J. W. Richmond, secretary and general manager; H. E. Lisy, treasurer. Its headquarters are at Wisner, and it supplies service to over 1,100 stations. It issued $2,400 of new stock during the year.

The company has a depreciation reserve of $32,947, a surplus of $14,329 and no bills or accounts payable. Total revenues increased nearly $1,000 during the year. The total was $26,934, divided between $24,964 exchange, $1,643 toll and $327 miscellaneous.

Operating expenses included $10,626 for maintenance and depreciation; $4,626 for traffic, $3,971 for commercial, a total of $19,223, or $180 more than the year previous.

The operating income was $7,711, from which were paid taxes $1,117, interest $142 and dividends of $4,070, leaving $2,382 to be passed to surplus, an increase of $1,200.

Westerly, R. I., Plant Bell Controlled; Independently Managed.

The Bell system's representation on the board of directors of the Westerly Automatic Telephone Co., Westerly, R. I., was increased last month to one-third with the election to the board of directors of Charles S. Pierce of Boston, vice-president and general counsel of the New England Telephone & Telegraph Co.

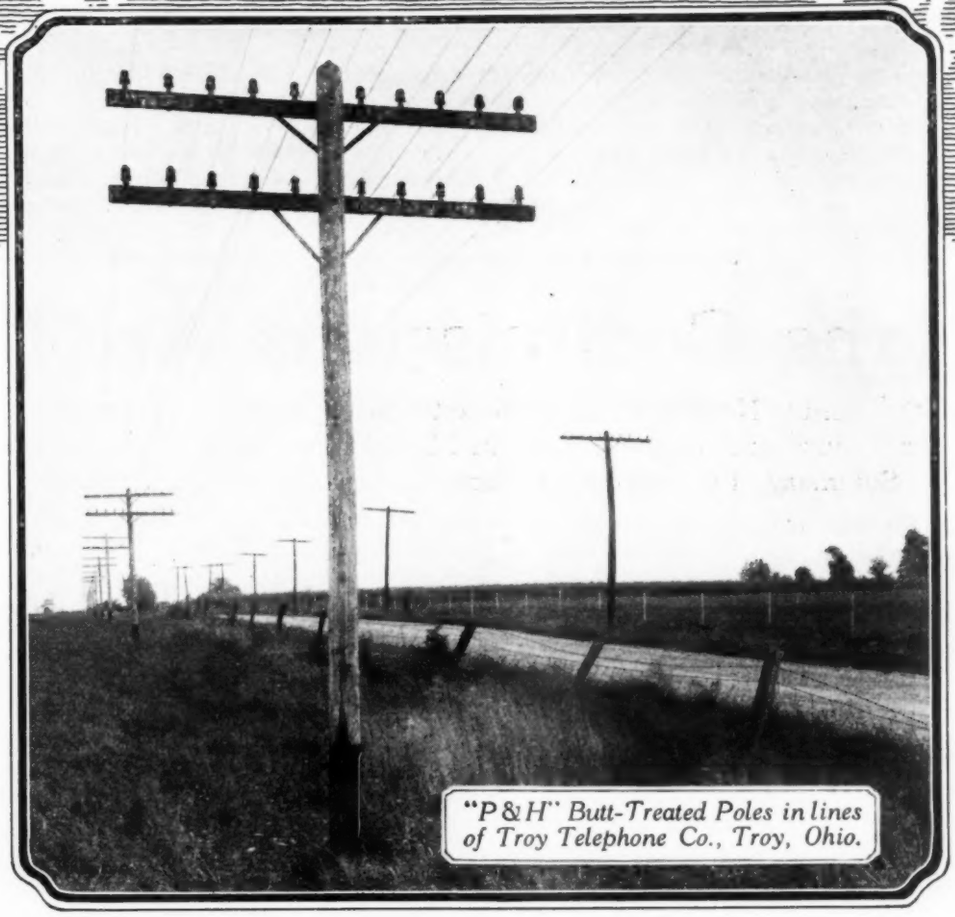
The New England Telephone & Telegraph Co. controls the voting stock of the Westerly company. It has three members on the board of 15 directors of the Westerly company. The Southern New England Telephone Co., of which the American Telephone & Telegraph Co. owns less than 50 per cent, has two directors.

Control of the policy of the Westerly company, however, is in the hands of the other 10 directors, headed by Dr. John Champlin, Sr., president and general manager, by virtue of an agreement which has been part of Rhode Island law since the general assembly authorized the absorption of the Providence Telephone Co. by the New England some years ago.

Although the Westerly company has been subject to the control of the Bell system since it was created in 1902, that control has never been exercised, and the Westerly company has been practically an Independent concern, it is stated.

The Westerly Automatic Telephone Co.'s subscription list has expanded from one of 96 to one of more than 3,000. Its original capitalization was $25,000. It is now capitalized at $300,000 and has assets in excess of half a million.

The company, which was started by Dr.



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Champlin, was the result of the dissatisfaction with the split service furnished in the town, half of which was served by the Southern New England and the other half by the old Providence Telephone Co. Dr. Champlin, in 1902, organized the Westerly concern to take over the properties of these two companies in that town, giving them, in return, stock in the new firm.

The stock held by the Providence and Southern New England companies, combined, controlled the voting power in the company, but it was agreed to leave the management to the local group. In the fall of 1902, after it had been in operation only a few months, the new company installed the automatic instruments, being one of the pioneers in their use. Its lines were gradually extended to neighboring villages.

In January, 1904, the offices of the company were destroyed by fire, but it resumed business and continued to expand. In 1914 it distinguished itself by being the first company in New England and the second in the United States to install a No. 13-gauge quad underground cable for toll service. A benefit and pension system for employes was adopted in 1922.

When the Providence Telephone Co. was absorbed by the New England T. & T., the stock of the Westerly company held by the Providence company was absorbed also.

With the consent of the Westerly group, the New England T. & T. acquired sufficient stock from the Southern New England to hold voting control, but according to Dr. Champlin, a clause was written into the law authorizing the absorption of the Providence company in which the New England T. & T. was specifically stated to have no intention of assimilating the Westerly Automatic.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Pacific Bell Asks for Rate Adjustments in San Francisco Area.

The Pacific Telephone & Telegraph Co. has applied to the California Railroad Commission for an order authorizing changes in specified exchange area; authorizing changes in inter-exchange and intra-exchange charges to be specified, and authorizing just and reasonable exchange rates, together with rules and regulations appertaining thereto.

The proposals which the company desires to bring before the commission for immediate consideration are:

(a) A proposal involving the consideration of an area to be treated as one telephone exchange to be known as "San Francisco-East Bay Exchange."

(b) A proposal involving alterations in the present San Francisco exchange area to conform with the proposed San Francisco-East Bay exchange area.

(c) A proposal involving alterations in the present exchange area, now known as East Bay Exchange, to conform with the proposed San Francisco-East Bay exchange area.

(d) A proposal involving the establishment of an area to become Orinda exchange.

(e) A proposal involving charges for intra-exchange and inter-exchange service in and between the several exchange areas under consideration in proposals a, b, c and d.

In compliance with the rules of the commission calling for a statement in justification of this application, the company declares its purpose to bring before the commission, in due course, all information found to be essential and necessary for a disposition of the fundamental proposals referred to, the fair value of the property involved, the insurance and continuity of service to present and prospective telephone users in the territory and the fundamental readjustment of service involved, which the company conceives to be essential to public interest; together with proof of its imperative need of early relief from existing conditions, and the insufficiency of revenue now secured from existing rates and the necessity of early relief therefrom.

Rate Case of Chesapeake & Potomac Co. and Commission Ended.

An agreement has been entered into between the Chesapeake & Potomac Telephone Co. and the District of Columbia Public Utilities Commission, thus bringing to a close the rate case which has been in litigation for the past two years.

The terms of the settlement are:

The company accepted the rate reduction ordered by the commission two years ago.

The company and the commission agreed to join in an application to the court for an appropriate order to dispense with the pending cases in court without any valuation of the company's property being fixed.

The present case will be entered as discontinued.

An appropriate order will be made by the commission continuing the reduced rates for a period of two years from June 1, 1927, and thereafter until modified by order of the commission.

The refund to subscribers will be handled by an appropriate order of the commission.

The commission regards the compromise as a great victory in its favor on the grounds that the company, after two years of fighting, finally has conceded that the commission's principles of valuation are correct.

The refund to telephone subscribers using unlimited service will amount to about $5.90 each. The amount to be returned to party line subscribers will vary, however.

After a conference, which will go down in the history of the new public utilities commission, A. E. Berry, president of the company issued a statement in which he said that the settlement was proposed to the commission "in line with the general policy of the company."

"It may mean," he said, "that the earnings of the company will be somewhat less than the company is entitled to earn, but the settlement will dispose of a controversy that might be expensive and long drawn out. It will give a clean slate with the commission.

"To be brief, the settlement is just good business so far as the company is concerned and I hope the company's patrons will be pleased."

The compromise was proposed by the company following the closing hearing on the valuation case on which the commission began hearings in April. It was discussed informally at that time and later a conference between officials of the company and members of the commission was arranged hastily and the plan accepted substantially as proposed by the company.

The rate case, which was settled through the compromise, was initiated by the commission early in 1925, an order being issued finding the fair value of the telephone company for rate-making purposes in April, 1925. This was followed by an order dated May 13, 1925, reducing the individual line residence rate from $5 to $4.75 a month and increasing the number of local messages allowed two-party-line subscribers from 35 to 40 per cent.

The case was later argued in the District Supreme Court, but no decision has as yet been handed down.

In the meantime the company gave bond, under direction of the court, to make refunds to both classes of subscribers of the reduction ordered by the commission in case the court's decision was upheld by the commission and the difference in rates has been impounded by the company since that time.

The order will be issued by the commission just as soon as the District Supreme Court approves a joint application of the company and the commission withdrawing

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can now be charged while in service
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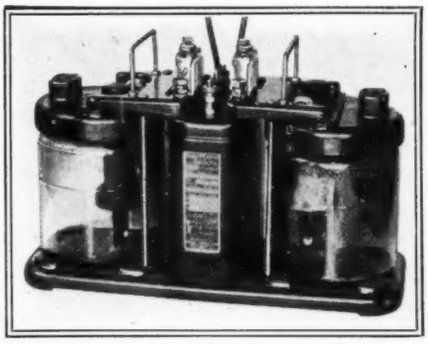

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Telephone storage batteries need no longer be removed from service for periodic charging. The Balkite Telephone Charger enables you to *charge them while in use, without interfering hum or noise.* Instead of maintaining two sets of batteries, using one while charging the other, one set is sufficient. Instead of using a high rate periodically, the charger is set at a comparatively low rate but left on continuous or Trickle Charge. The charger constantly supplies to the battery slightly more power than is taken out by use. The result is a unit delivering full uninterrupted DC power at all times.

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Because it is the most dependable source of power Balkite Trickle Charging in a few years has become the standard method of supplying power to railway signal systems. In the telephone field where reliability is quite as important, now that noiseless charging is possible it is destined to replace both present storage battery and primary battery systems to a large extent.

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the valuation and rate case which has been in litigation for the past two years.

The impounded fund ranges between $140,000 and $150,000, according to the commission's calculations.

Commission Validates Issuance of Stock Without Authority.

The Nebraska State Railway Commission has granted authority to the Chapman Telephone Co. to issue 15 shares of stock of a par value of $10. The proceeds of 13 of the shares are to be expended for additions and betterments, while the other two shares had been issued, and the money expended, without authority. This action was validated by the order. As the need for the expenditures was urgent and necessary, no hearing was held.

Asks Increased Rates When Common Battery Service Is Given.

The Northwestern Bell Telephone Co. has applied to the Nebraska State Railway Commission for authority to increase its rate schedule at Gothenburg whenever it is in a position to give common battery service. The present rates are for grounded service, and the company recently completed changing over the entire exchange to metallic. Accompanying the application is a document signed by 63 per cent of the subscribers at the exchange who state they are willing to pay the increased rates if common battery service be given.

In its petition the company says that the present rates are not remunerative, that the city has grown in importance to justify a better grade of service than is possible to give to it under the existing schedules, and that there is general acquiescence in increased rates if that better service is furnished.

Bell Control Over Michigan City Company Strengthened.

The Indiana Public Service Commission recently authorized the Indiana Bell Telephone Co. to acquire $150,000 of the common stock which the Merchants Mutual Telephone Co. of Michigan City will be permitted to issue.

The Merchants Mutual company has an authorized capitalization of $500,000, of which $235,000 was acquired by the Bell company last July.

Telephone Rates Increased by Porto Rico Telephone Co.

Increase in telephone rates for Porto Rico has been authorized, and they became effective May 1, according to H. P. Macgowan, United States trade commissioner at San Juan. As a result of the $60,000 additional annual income which it expects to receive, the Porto Rico Telephone Co. plans numerous extensions and improvements in the telephone service all over the island.

The action of the Porto Rico Public Service Commission was taken at the request of the company, the latter finding that additional revenue was required to cover the improvements in equipment, wage increases and the setting aside of funds to meet property depreciation. The commission granted authority to make the rate increase after deciding what would be a fair annual return on the investment of the company, taking depreciation into consideration.

The new rates are distributed in a graduated increase over the four telephone zones of the island and the different types of service. No increase in long distance call tolls is contemplated.

Commission to Investigate Free Service on Its Own Motion.

The Nebraska State Railway Commission, on its own motion, has decided to enter upon an investigation in the matter of free service in several southwestern counties of the state, and will hold public hearings at Cambridge on May 11, to which all companies interested will be invited to send their representatives.

The commission had received a number of complaints from Bartley, Cambridge and Indianola complaining of, and expressing dissatisfaction with, conditions brought about by certain free telephone service between various villages in their vicinity. It also had a formal complaint from Farnam, which is supplied by the Northwestern Bell and is surrounded by a lot of farm mutuals that allow unlimited service through a knife switch at the exchange at Orafino.

Farnam people said that they had to pay toll to other towns, and so had persons desiring to deal with local business men. The result of the free service conditions was that, because they could talk free, farmers did business in the other towns. This involves the villages of Orafino, Eustis, Arapahoe, Holbrook, Cambridge, Bartley, Indianola, Stockville, Curtis and Moorefield.

Secretary Kloidy of the state telephone association had tried to straighten out the situation, but was unable to do so, and suggested that the commission try its hand. A number of complaints received say that, because no toll is charged, the lines are used so much for visiting that traffic is congested, and it is impossible to transact business over them promptly and satisfactorily.

Novel Complaint to Commission Concerning Directory.

Something new in the way of complaints was received by the Nebraska State Railway Commission when it was asked the other day by a Lincoln woman to aid her in securing damages from the local telephone company. She said that in putting down her street address in the telephone directory, the company substituted a figure "1" for a figure "3," and that this greatly annoyed her.

The name and telephone number were correctly printed, but she felt that she was either entitled to damages, or a remission of all charges for her instrument during the period the directory was in circulation.

Commission to Investigate Complaints of Poor Service.

Citizens of Osmond, Pierce county, have filed a petition with the Nebraska State Railway Commission asking that something be done about getting better telephone service from the Osmond Telephone Co. They say that if something is not done about it by July 1, they will all order their telephones out.

They say that they have repeatedly protested to J. E. Hancock, the manager and owner, but that he pays no heed to their protests and makes no effort to correct conditions. The commission will send an engineer to Osmond to check up on the service and make recommendations for an order that will issue if the complaints are well founded.

Ohio Commission Approves Sale of Marion County Company.

Sale of the Marion County Telephone Co., Marion, Ohio, to the Ohio Associated Telephone Co., negotiations for which were completed last December, was formally approved on May 5 by the Ohio Public Utilities Commission.

In payment for the property, the purchasing company agrees to deliver $1,000,000 in first mortgage, 20-year 6 per cent bonds, 25,000 shares of no par common stock and 2,500 shares of no par preferred stock which will pay a dividend of $6 per share annually.

These securities are to be delivered to the United Telephone Co. of Chicago, of which the Ohio Associated is the operating company. Stockholders received cash for their holdings in payments made by the United Telephone Co. in January. The total cash consideration is reported to have been in the neighborhood of $1,500,000, the sale price of the common stock having been $136 a share.

The Marion County Telephone Co. was capitalized at $1,000,000, of which $900,000 was in common stock and $100,000 in preferred. There were approximately 14 stockholders.

Action of the state utilities commission approving the sale followed filing of a report of appraisement of the Marion County Telephone Co. property recently completed by a corps of appraisers and auditors in the employ of the commission. The appraisement totals $1,188,872.60, which includes all of the company's assets with the exception of the usual "going concern" value.

Decision by the commission in the con-

Strength where it's needed

Look at the loop of this Havens Clamp. That's where the heaviest strain comes. That's where the Crescent and Smith & Hemenway Clamp proves its superiority. That loop is forged of solid steel, practically unbreakable.

The lineman's work has enough hazards and annoyances at best. The chance of broken or inferior clamps should be completely eliminated—and the surest way is to equip with a Havens Clamp, made under the supervision of and guaranteed by the originators of the Crescent Wrench.

The Crescent and Smith & Hemenway line includes pliers, climbers, auger bits and a complete assortment of tools for electrical work.

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CRESCENT *and* Smith & Hemenway *Electrician's* TOOLS

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troversy over rates, which has been in progress since about two years ago, is expected to come in the near future. The appraisement figures compiled by the commission's employes will probably be used as a basis for deciding the dispute, it is stated.

The rates in dispute are now in effect in Marion, the company having filed a bond guaranteeing refunds to its patrons in case the rates are reduced.

Immediately after the deed for the property is recorded and other final details disposed of, the Marion County Telephone Co. will be formally dissolved and the business will be operated under the name of Ohio Associated Telephone Co.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

May 19: Roseville Telephone Co. applied for authority to establish a rate for joint-user service in connection with business commercial flat-rate private branch exchange service, amounting to $2.50 per month, and to establish semi-public coin-box service within the primary rate area of the Roseville exchange as follows: Individual wall set per message, 5 cents, minimum charge, 12 cents per day; individual line desk set 25 cents per month, additional to these charges; extension station, wall or desk set without coin box, $1 per month.

May 19: Complaint dismissed of Tom Carpenter against The Pacific Telephone & Telegraph Co., upon request of complainant.

May 19: Pacific Telephone & Telegraph Co. applied for order authorizing changes in specified exchange areas; changes in inter-exchange and intra-exchange charges to be specified and authorizing just and reasonable exchange rates, together with rules and regulations.

CONNECTICUT.

May 2: Objection dismissed against the Southern New England Telephone Co., charging unreasonable rates. Present toll rate of 10 cents between Farmington and Hartford declared just and reasonable.

DISTRICT OF COLUMBIA.

May 13: Rates of the Chesapeake & Potomac Telephone Co. reduced as of June 10, 1925, and a fund ranging between $140,000 and $150,000 impounded by the company since that time is to be returned to subscribers according to an agreement entered into by the telephone company and the commission. An order will be issued as soon as the court approves a joint application of the company and the commission withdrawing the valuation and rate case which has been in litigation for the past two years.

ILLINOIS.

May 24: Hearing at Chicago before Chairman Jackson on the motion of the commission in the matter of what, if any, charge additional to the existing exchange rates shall be made for service of the Illinois Bell Telephone Co. in Chicago and other communities served by the company for the use of hand telephone sets.

May 24: Hearing at Chicago before Commissioner Trovillion on the motion of the commission in the matter of citation to show cause, if any, in the matter of what additional charge in the existing exchange rates in Belvidere shall be made for service rendered by use of hand telephone sets by the Belvidere Telephone Co., as set forth in rate schedule Ill. C. C. No. 4, original sheet 6.

May 24: Hearing at Chicago before Commissioner Trovillion on the motion of the commission in the matter of what additional charge in the existing exchange rates in the territory served by the Southwestern Bell Telephone Co. should be made for service rendered by use of hand telephone sets by the company, stated in rate schedule Ill. C. C. 1, first revised sheet 1, miscellaneous equipment section.

May 24: Hearing at Chicago before Chairman Jackson in the matter of proposed rates as filed by the Illinois Bell Telephone Co., for hand telephone set service in Chicago, rate schedule I. P. U. C. 1, sheet 16; Ill. C. C. 1, sheet 5, Salem; I. P. U. C. 1, sheet 7, Delavan, et al; I. P. U. C. 1, sheet 8, Mt. Vernon; I. P. U. C. 1, sheet 9, for Antioch and other municipalities; I. P. U. C. 1, sheet 10, Aurora and others; I. P. U. C. 1, sheet 11, for Chicago Heights and others; I. P. U. C. 1, sheet 12, for Wheaton and Zion; I. P. U. C. 1, sheet 13, Lockport; Ill. C. C. 2, sheet 7, Alton; Ill. C. C. 2, sheet 8, for Cairo and others; Ill. C. C. 2, sheet 9, for Edwardsville; I. P. U. C. 3, sheet 8, for Beardstown, and Ill. C. C. 3, sheet 9, for Sterling.

May 26: Hearing at Chicago before Chairman Jackson on the motion of the commission in the matter of citation to show cause why press telephone service of the Illinois Bell Telephone Co., routing between Lewistown and Springfield, should not be made via Havana.

INDIANA.

May 9: The Johnson County Telephone Co., applied for authority to buy the Franklin Telephone Co. and to issue securities with which to finance the purchase. The buying company would mortgage its property and hold as collateral all its assets to secure payment of the bonds.

INDIANA.

May 13: Indiana Bell Telephone Co. authorized to acquire $150,000 of the common stock which the Merchants Mutual Telephone Co., Michigan City, will be permitted to issue.

MISSOURI.

April 16: Petition of Willow Springs Local and Long Distance Telephone Co., Willow Springs, and the Pomona Telephone Exchange, Pomona, for an order prohibiting the Pomona Mutual Telephone Co. from doing business in Pomona dismissed for want of jurisdiction.

NEBRASKA.

May 19: Complaint filed by patrons of Osmond Telephone Co. that they were unable to get better service after repeated requests.

May 20: Application filed by the Nuckolls County Independent Telephone Co. for authority to increase rates for grounded party service to Cadams, from exchange at Nelson ten miles away, to serve four business houses and seven residences.

May 20: In the matter of the application of the Lincoln Telephone & Telegraph Co. for additional rates for private branch exchanges, ordered that the company be permitted to put into effect a charge for each battery charger unit of $3 a month; each pole-charger $3 a month, and each storage battery unit $5 a month.

NEW YORK.

May 19: Order issued abrogating and annulling an order of December 17, 1925, directing the New York Telephone Co. to continue service to the village of Skaneatales until a determination by the courts of franchise provisions relating to free village telephones. The commission closed the case on the sole ground that it is without jurisdiction.

May 25: Hearing at Albany on petition of North Creek & Chestertown Telephone Corp., to begin construction of its telephone lines and to issue $35,000 in its common capital stock, a first mortgage for an unlimited amount and $50,000 in 6 per cent, 20-year gold bonds, series A, under the mortgage.

OKLAHOMA.

May 27: Hearing on the application of the Hooker Telephone Co. for an increase in exchange rates at Hooker.

TENNESSEE.

May 11: Application filed by the People's Telephone & Telegraph Co., of Knoxville, authority to issue $90,000 of its stock. The issue of stock was made in 1919 and, the commission has approved it along with a subsequent issue, but for some reason the company sought a separate approval, which has been granted.

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Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

Incorporations and New Telephone Companies.

ROCK ISLAND, ILL.—Articles of incorporation were issued recently to the Milan Telegraph Co., Milan, capitalized at $10,000. The incorporators are Floyd E. Wilson, Mrs. Floyd E. Wilson, Albany, Mrs. Ella M. Wilson. The company is authorized to operate both telegraph and telephone lines.

JOHNSON, KANS.—A telephone company has been formed here, and an exchange is being built. The Southwestern Bell Telephone Co. is building a toll line from Syracuse to Johnson and expects to have the toll line connected about the same time the exchange is placed in operation.

MINCO, OKLA.—The Mid-West Telephone has been incorporated by H. J. Clark, and Sherley Stewart, both of Salina, Kans., and E. E. Miles, Garber. Its capital is $50,000.

OKLAHOMA CITY, OKLA.—The Deep Fork Telephone Co. has been incorporated by M. E. Reynolds, J. R. Pemberton and Victor Peterson of Oklahoma City. Its capital is $450.

SALEM, ORE.—Roy Woodbury, R. L. Martin, and George T. Cochran of Union, are the incorporators of a company which will engage in owning and operating telephone systems, telegraph systems and railroads. The capital stock is $25,000.

DONELSON, TENN.—The Donelson Home Telephone Co., has filed application for a charter for record in the office of West Morton county register. The company owns and operates its own exchange at Donelson, with subscribers in the town and in rural territory. The incorporators are: T. B. Boyd, who is president of the company; E. E. Ridley, L. W. Lane, J. F. Weakly and W. W. Castleman. The capital stock authorized is $5,000.

CHARLOTTESVILLE, VA.—The Piedmont Telephone Co. of Charlottesville, chartered, is being organized to take over the lines of the Albemarle, Scottsville and Culpeper companies which are to be merged into one under that name. Maximum capital is limited to $500,000.

In the incorporation papers, officers of the new company are listed as follows: W. D. Haden, president; H. A. Dinwiddie, vice-president and M. E. Clements, secretary, all of Charlottesville.

Financial.

MICHIGAN CITY, IND.—The Merchants Mutual Telephone Co. recently filed with the secretary of state a certificate of increase in its capital stock from $350,000 to $500,000.

TURNER, ORE.—The Turner Telephone Co. has increased its capital stock from $1,800 to $3,300.

FARMVILLE, VA.—The Farmville Telephone Co. has increased its maximum capital stock from $10,000 to $50,000. R. B. Johns, president; J. L. Bugg, secretary, Farmville.

Construction.

STARBUCK, MINN.—The Starbuck Telephone Co. has awarded a contract to Larson Brothers, contractors, for a modern office building and telephone exchange. The new structure will cost approximately $5,000. Construction work has already started. A. H. Dreyer is manager of the company.

ALBANY, MO.—At a meeting of the board of directors of the Albany Telephone Co. it was unanimously decided to present to the stockholders the proposition of erecting a building, equipping the office, and also improving the service. A special meeting of the stockholders is called for July 12 to vote on the matter of authorizing the board to issue $30,000 for the purpose.

NELIGH, NEB.—The Madison Telephone Co., which owns the Neligh system, had its engineers here recently setting the stakes for the rebuilding of all the outside work in the city. Nothing is to remain of the present outside structure. All wires are to be in cables and wherever possible the cables will be run in the alleys instead of the streets as at present. The cables will be carried altogether on new poles, higher and stronger than the ones now in use. The central office has already been practically remodeled, but some additional new equipment is to be installed. The company estimates the work will be completed in about two months.

MEMPHIS, TENN.—Southwestern Bell Telephone & Telegraph Co., 197 Court Ave., plans a $250,000 annex to the present building, 6-story; it will also probably erect a $100,000 office in the eastern section of city. Frank Flournoy is the manager.

Elections.

PESOTUM, ILL.—The stockholders of the Pesotum Home Telephone Co. recently held a business meeting at which these officers were elected: J. E. Schlorff, president; J. M. Clark, secretary; Frank Ambos, treasurer; C. J. Kardong, director.

LE CLAIRE, IOWA.—The Le Claire Telephone Co. has re-elected these officers and directors: President, J. P. Suiter; vice-president, Hugo Lambach; secretary, C. C. Brown; treasurer, E. G. Weismann; directors, J. J. Ryan, Dr. C. C. Johnson. Dr. J. W. Richards is a hold-over director.

NORTH HANNIBAL, N. Y.—At the annual meeting of the North Hannibal Telephone Co., held in the schoolhouse at North Hannibal, the following officers were elected: President, S. R. Lockwood; secretary and treasurer, Raymond Cooper; three directors, Walpole for three years, Washburn for two years and Stock for one year.

NEWARK, OHIO.—At the annual meeting of stockholders of the Newark Telephone Co. the following named officers and directors were elected for the coming year: W. L. Cary, president; C. H. Spencer, vice-president; Judge Robbins Hunter, secretary; W. C. Metz, treasurer; T. J. Evans, E. Cary Norris, W. C. Newton of Columbus, Dwight Warner of Utica and Dr. H. H. Postle.

ENID, OKLA.—Officers of the Oklahoma Rural Telephone Co. were elected at the annual meeting here. George Raemer, Fairmount, is president; John Piper, Douglas, vice-president; and F. D. Owens, Enid, secretary.

LURAY, VA.—At the annual meeting of

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Stromberg Carlson No. 8 or No. 11 Combine line drops and jacks per strip of 5-350 ohm @ $7.50—500 ohm @.. 7.50

Automatic Elec. Co. 2-M. F. Condensers. Size 4½x2x1 @..... .35

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FOR SALE—Exchange, Northern Illinois; 225 stations; annual income 60% of purchase price. No capital tied up in real estate. Best one-man proposition in middle west. Address 6899, care of TELEPHONY.

FOR SALE—50 brand new Leeds & Northrup Galvanometers. Excellent equipment for testing line and coil resistance up to 2000 ohms. Price $17.50 f. o. b. New York. Telephone Trading Post, 22 Beaver St., New York City.

FOR SALE—Telephone Co. located in central Indiana; 500 stations. New board, town all cable laid in duct, country lines all rebuilt. Entire plant in first class condition. Terms to suit purchaser. Reason for selling, poor health. Address 6904, care of TELEPHONY.

FOR SALE—Controlling interest in rundown Farmers' Telephone System, central Indiana. Built in 1911. Good construction; cedar poles, all metallic, No. 12 wire, 450 stations. Exchange in good town of 5000. Must sell because of death in family. Address 6906, care of TELEPHONY.

FOR SALE—Growing telephone system in the "heart of the Ozarks," three miles from the proposed Table Rock Dam. New switchboard. For particulars, inquire Hollister Telephone Co., Hollister, Mo.

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the stockholders of Page County Farmers Mutual Telephone Co. these officers were elected: President, Charles E. Grave; vice-president, J. H. Good; G. W. Strole, W. E. Burner, J. A. Huffman, C. A. Schuler, A. J. Yowell, S. H. Spitler, and C. W. Louderback, directors.

Miscellaneous.

TURLOCK, CALIF.—By a decision of the board of city trustees at their meeting held recently, the suit brought against the Turlock Home Telephone & Telegraph Co. by the city of Turlock in 1923, in an endeavor to collect 2 per cent franchise tax on telephone tolls received from farmer lines, passed into history.

City Attorney J. C. Nichols instructed the board that ten days remained for the city to amend its complaint to the Supreme Court if it so desired, but advised that the case was without merit in his opinion. The trustees decided to abide by Nichols' opinion.

POLK CITY, FLA.—Permission to install and operate a telephone system in Polk City has been extended to the Peninsula Telephone Co. by the town commission of Polk City, which adopted an ordinance providing for the franchise.

Several weeks ago the company ran a line here and put in a pay station at Wayside Lodge, so it would be possible to make telephone calls to and from Polk City. The extension of the line was held up at that time pending the granting of a franchise by the town government.

GALESBURG, ILL.—Stockholders of the Galesburg Union Telephone Co. met recently and voted on the proposition to surrender the charter and corporate name of the company.

This is formal action of the stockholders in the dissolution of the Galesburg Union Telephone Co., which becomes the Intra-State Telephone Co. This action was the final step in the transaction.

BELLEVUE, IOWA.—The Bellevue Telephone Co. has sold its system to the Central Cities Telephone Co. of Chicago.

KINGSDOWN, KANS.—Mr. and Mrs. C. E. Bowden have purchased the Kingsdown telephone lines and exchange from the Southwest Telephone Co. and are taking charge. They have about 80 patrons.

GRAND BEACH, MICH.—Judge Charles E. White recently granted a temporary mandatory injunction requiring the Michigan Bell Telephone Co. to continue its switchboard service this summer at the Golfmore hotel, Grand Beach. The telephone switchboard service had been discontinued following a disagreement over funds claimed by the telephone company and by the Grand Beach corporation.

MUSKEGON, MICH.—The Michigan Home Telephone Co. has announced the purchase of the Dalton and Holton exchanges, giving the company all exchanges north to Fremont and Ludington.

Edward F. Plunkett, Muskegon and Muskegon Heights electrical inspector, owned the Dalton exchange, while the Holton exchange was purchased from the Holton Telephone Co.

CENTRALIA, MO.—The name of Home Telephone Co. has changed to the Missouri Telephone Co., consolidated.

SHELBYVILLE, MO.—E. C. Hunt of Blair, Neb., has purchased the Shelbyville Telephone Co. from L. A. Kaylor and J. M. Feely, paying $25,000. Possession was to have been given June 1, but the fire, which destroyed the equipment of the plant here, changed the plans. Restoration has been turned over to the new management, L. A. Kaylor will be retained as manager. Mr. Hunt also has bought the Shelbina and Clarence plants for $40,000 each.

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